

Fig. 1

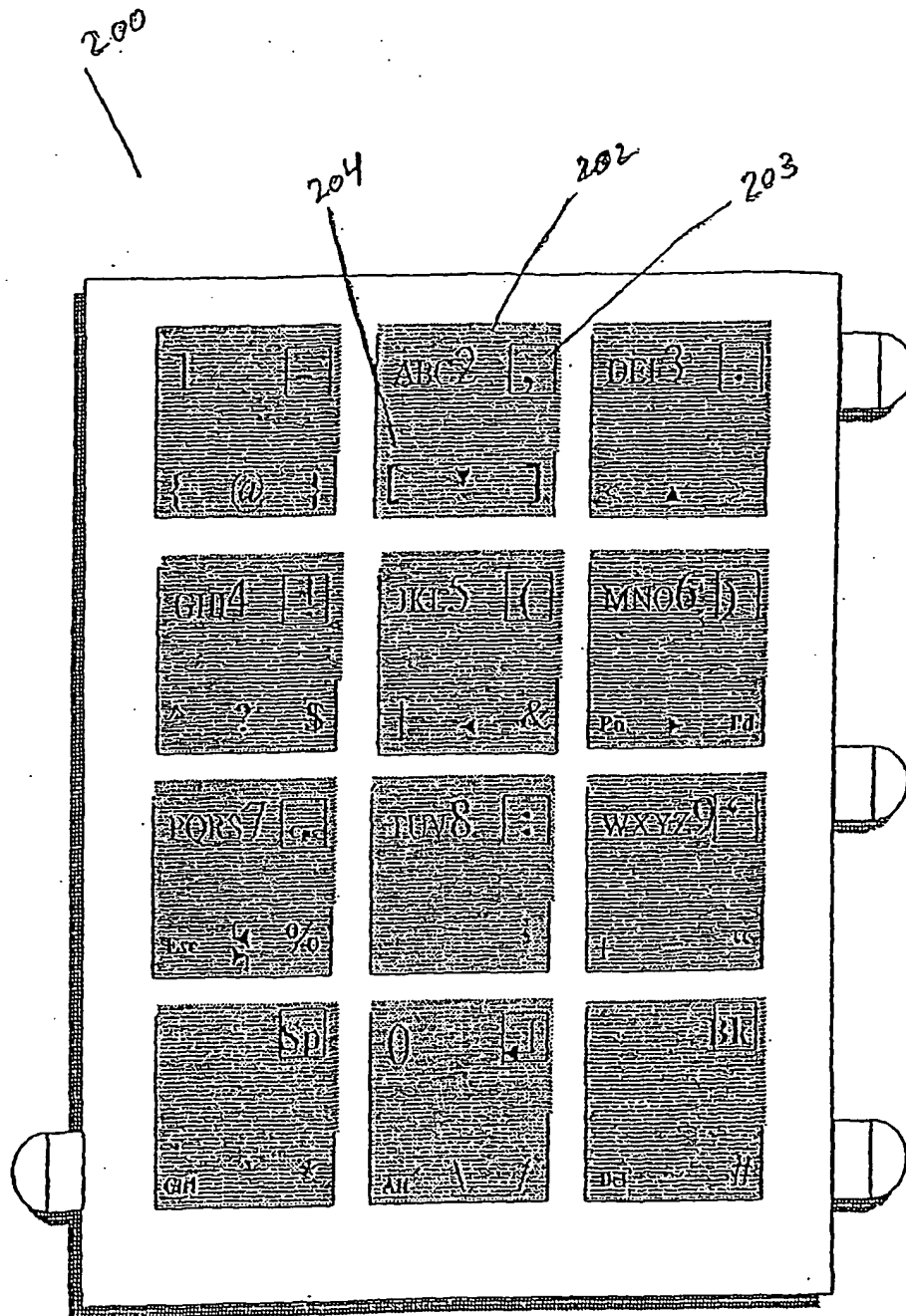


Fig. 2

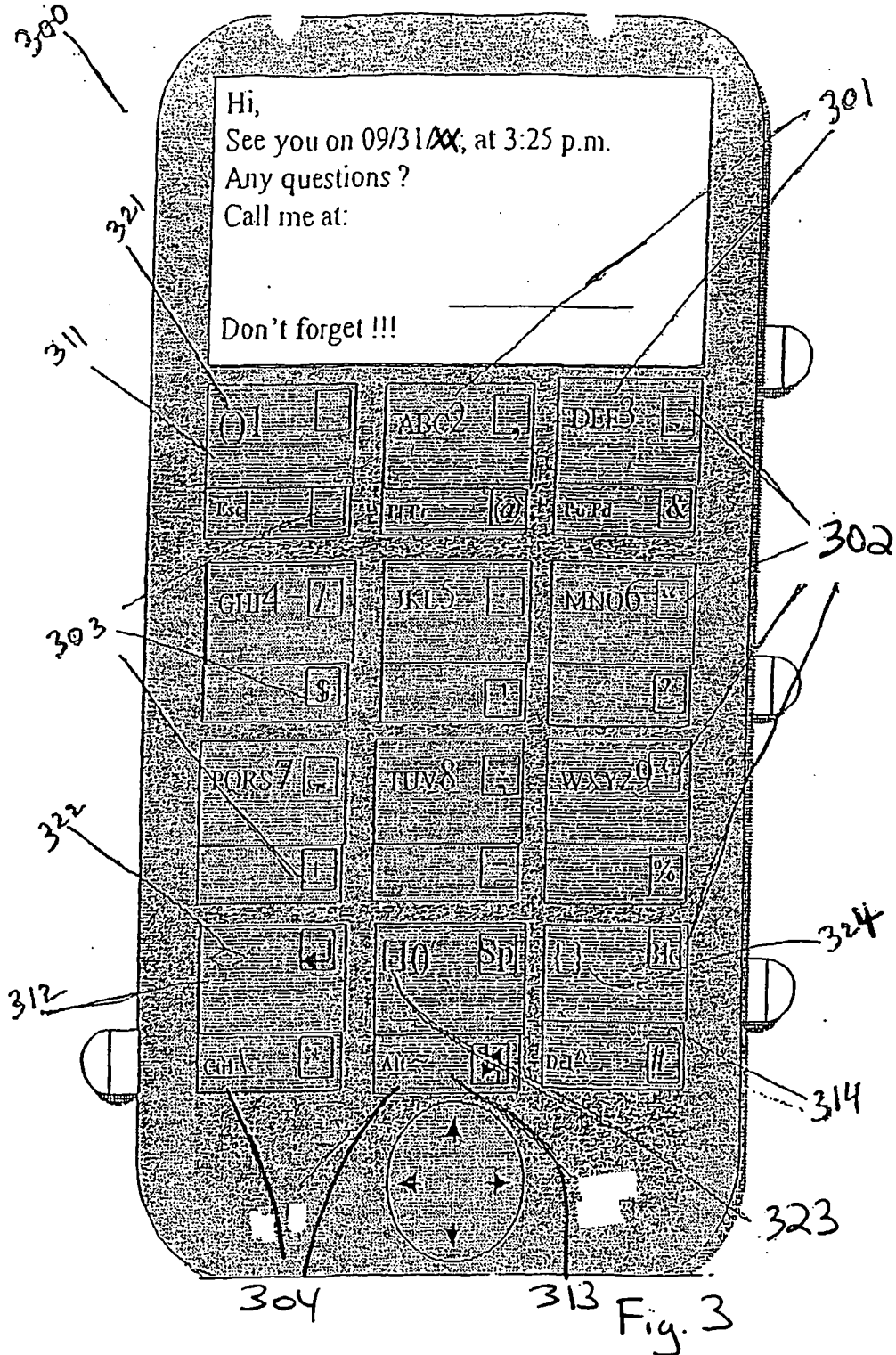
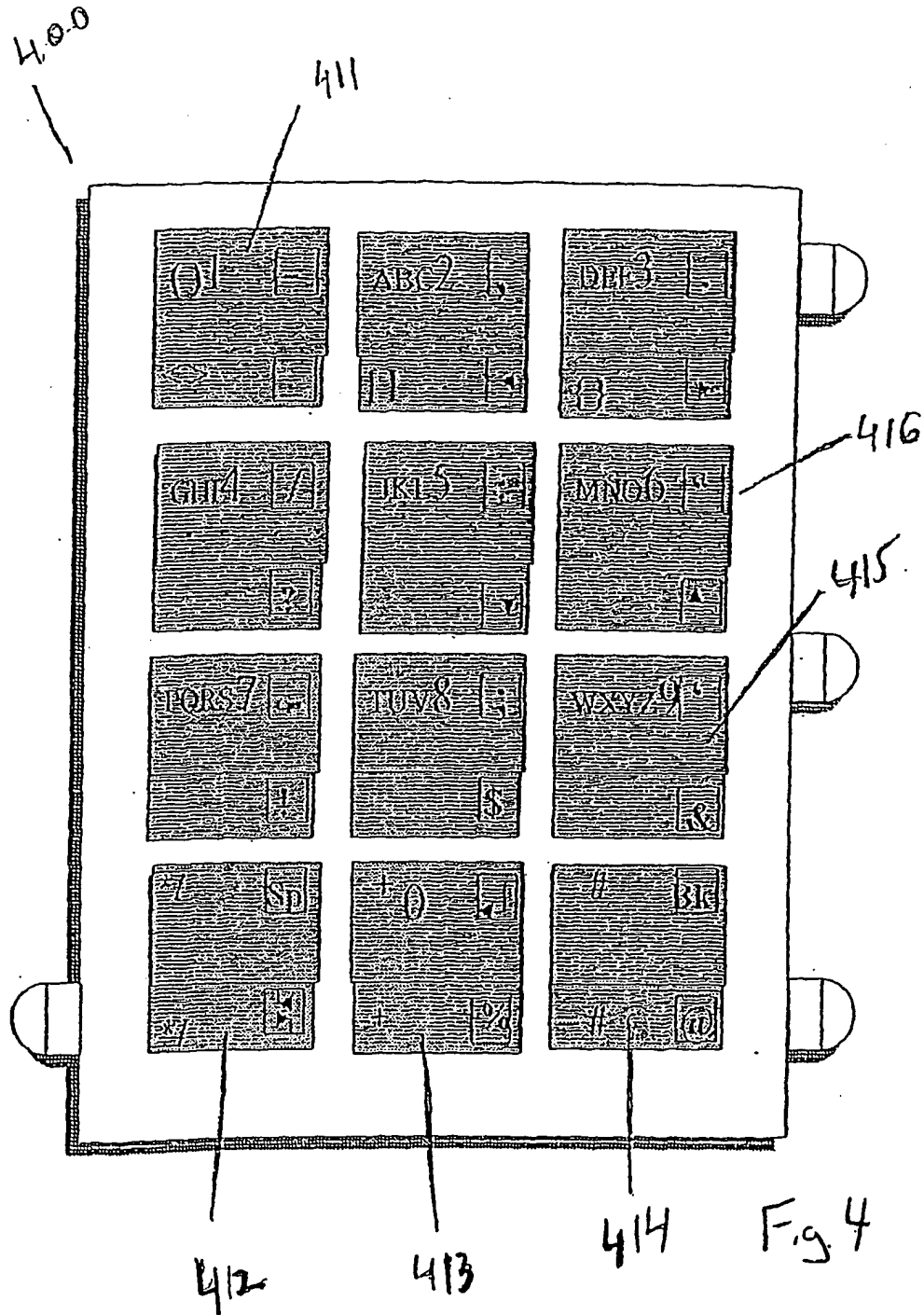


Fig. 3



500—

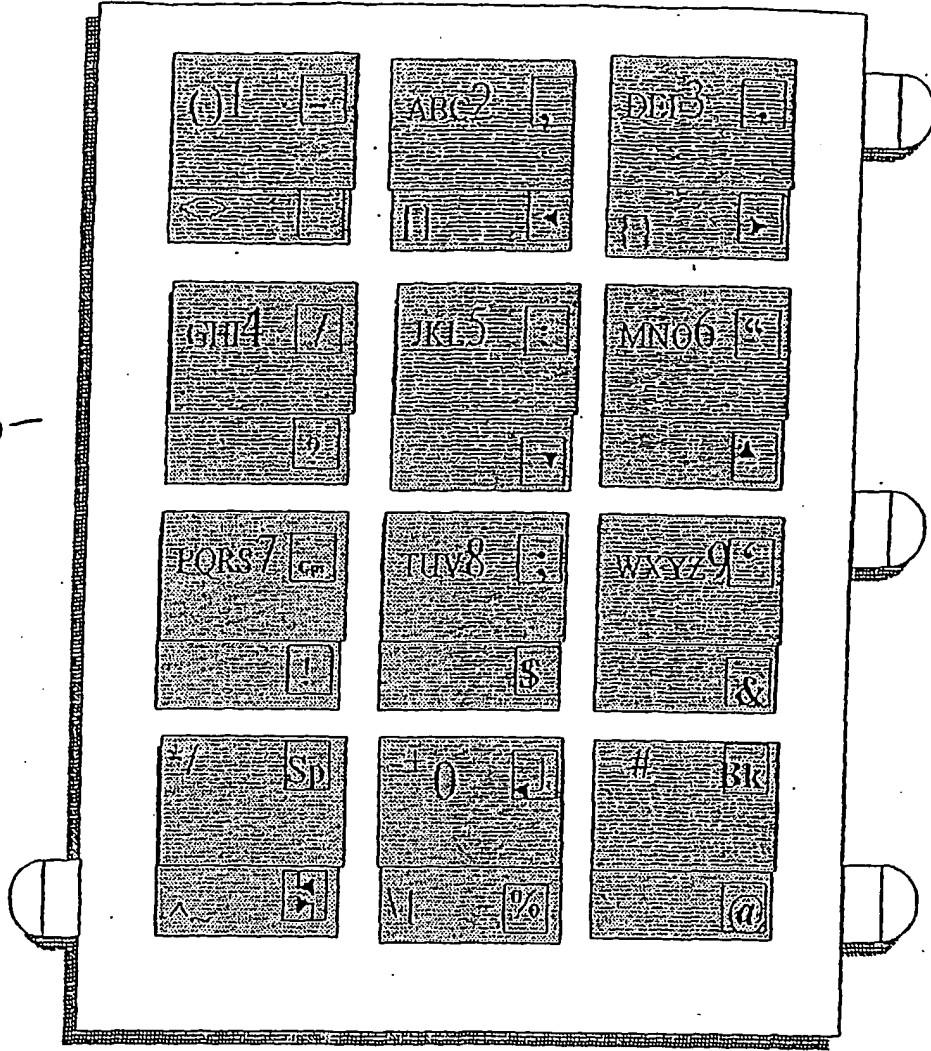
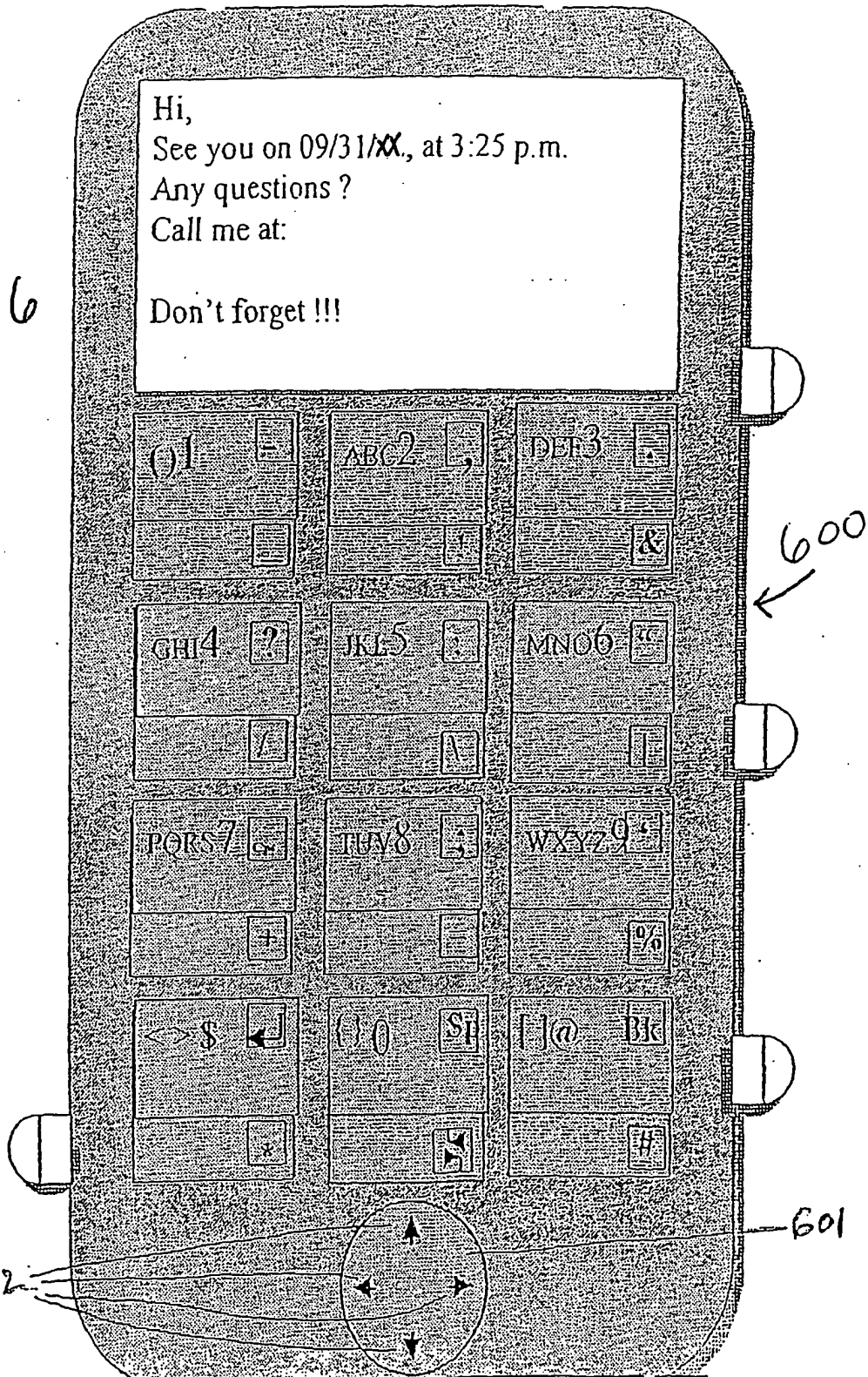
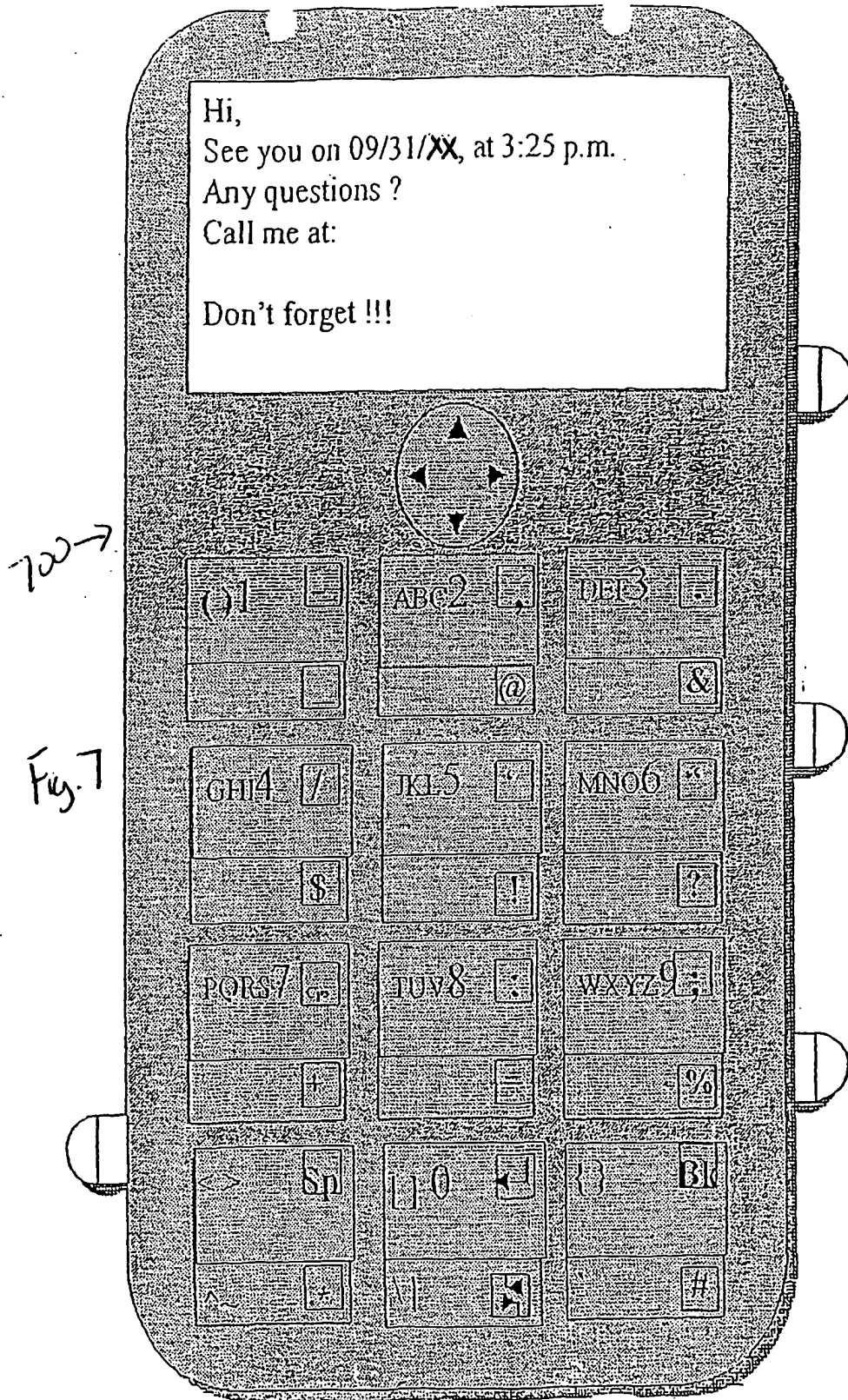


Fig. 5

Fig. 6





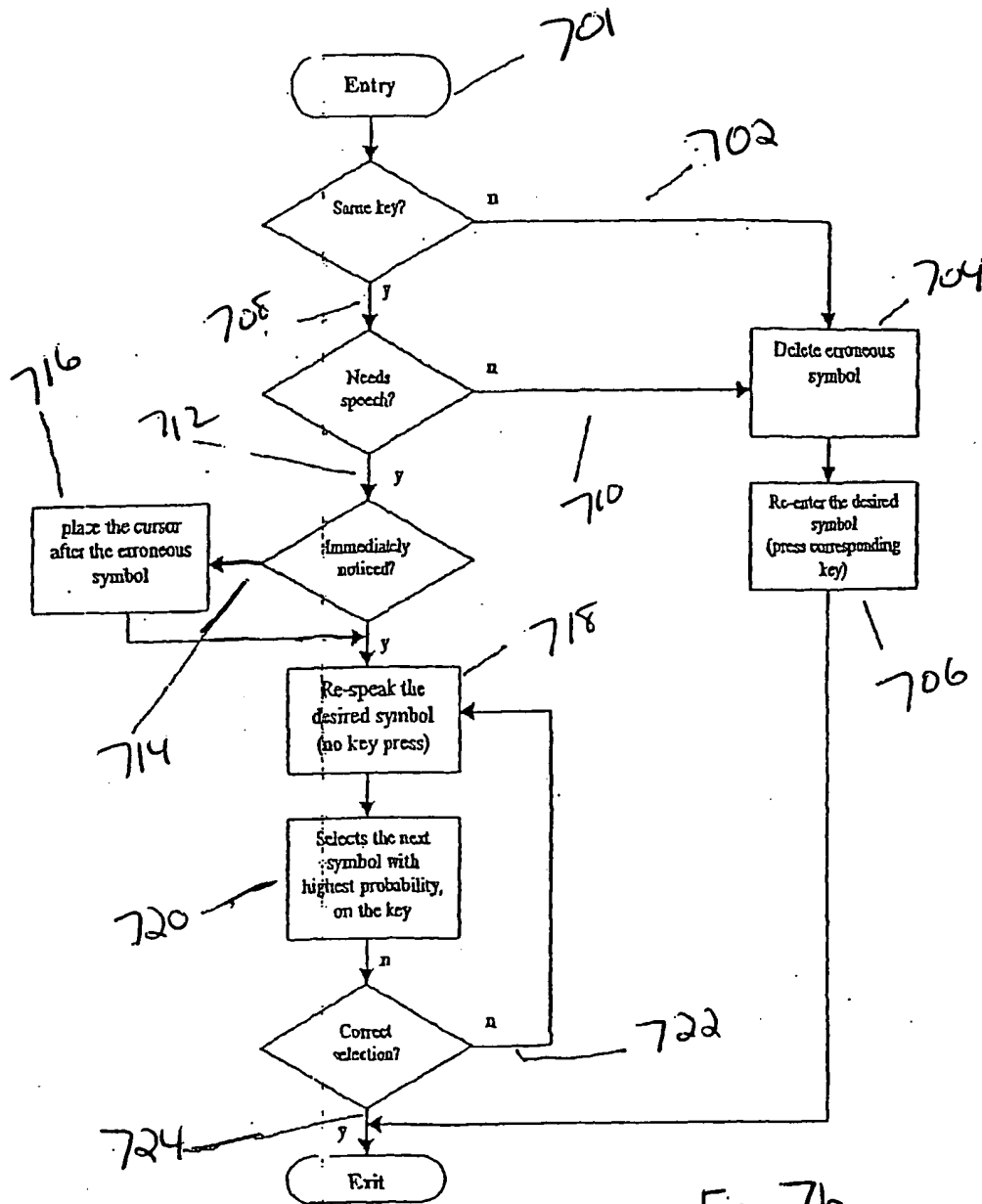


Fig. 7b

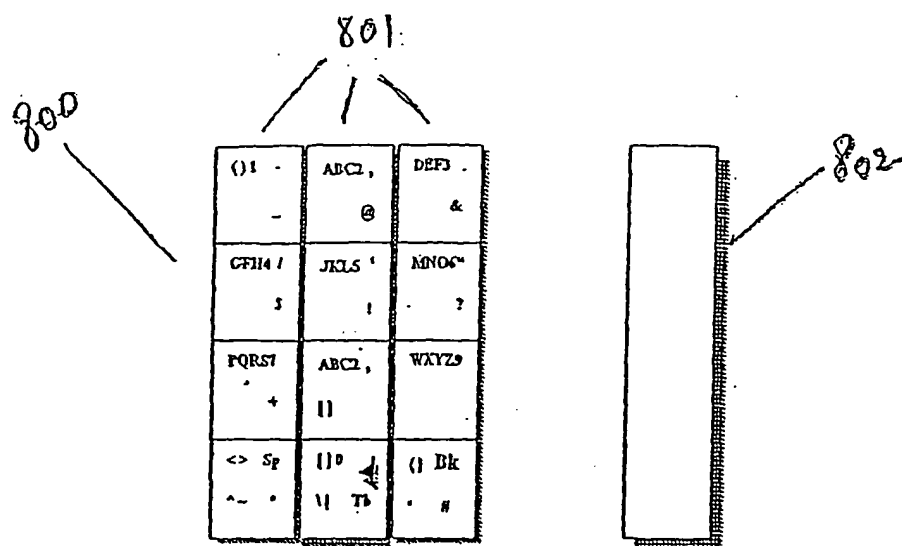


Fig. 8

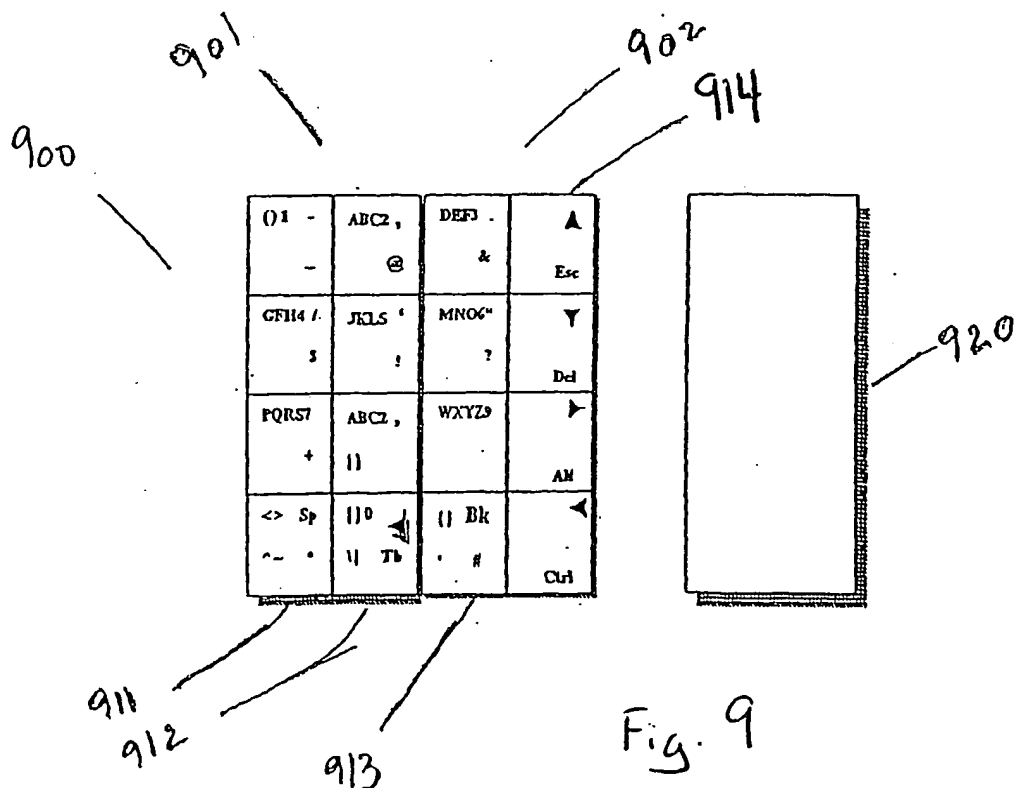
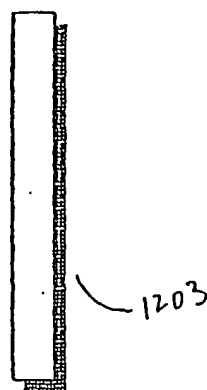
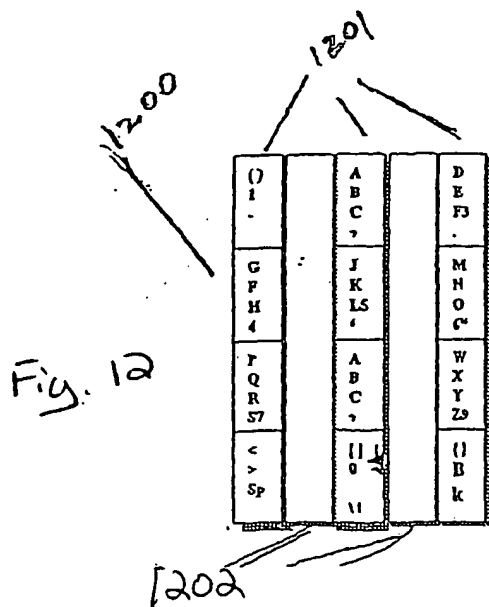
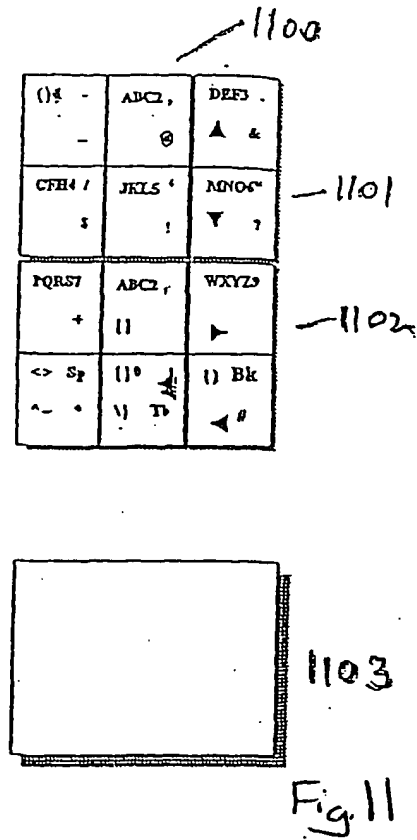
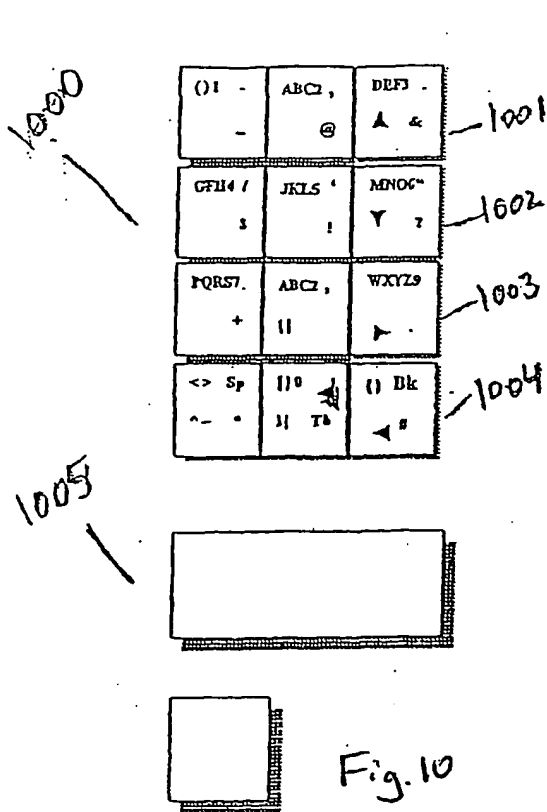


Fig. 9



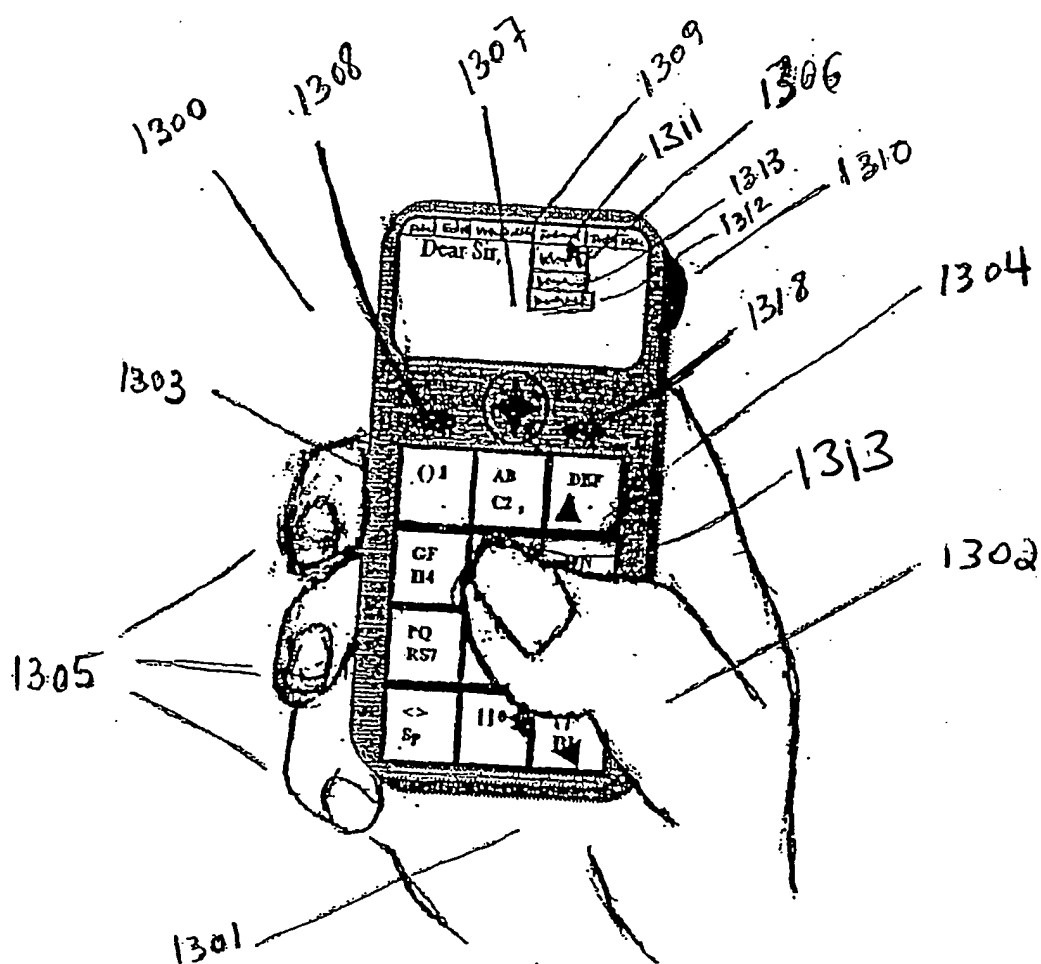


Fig. 13

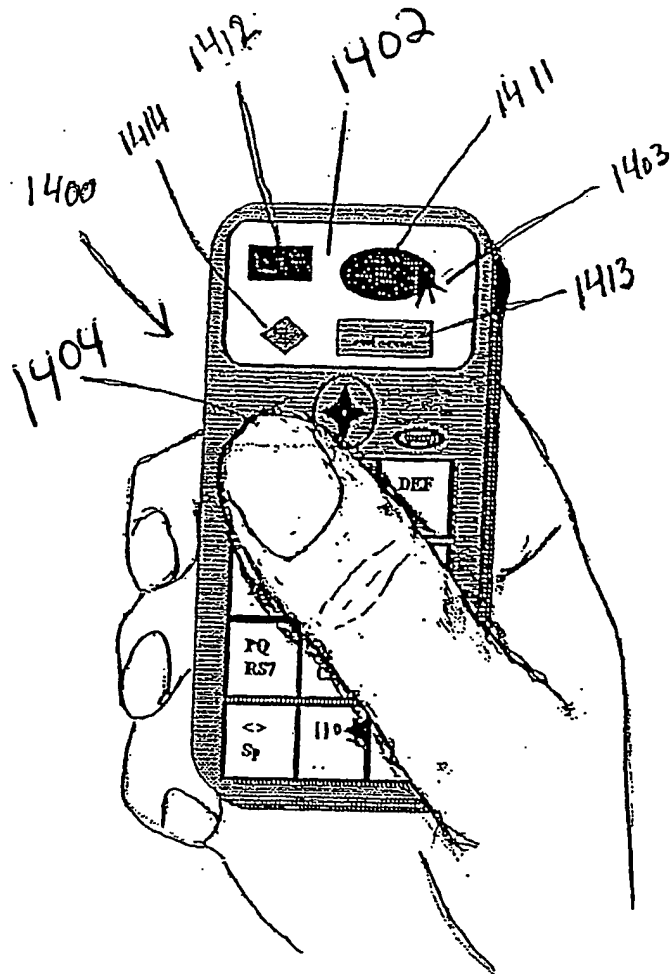


Fig. 14

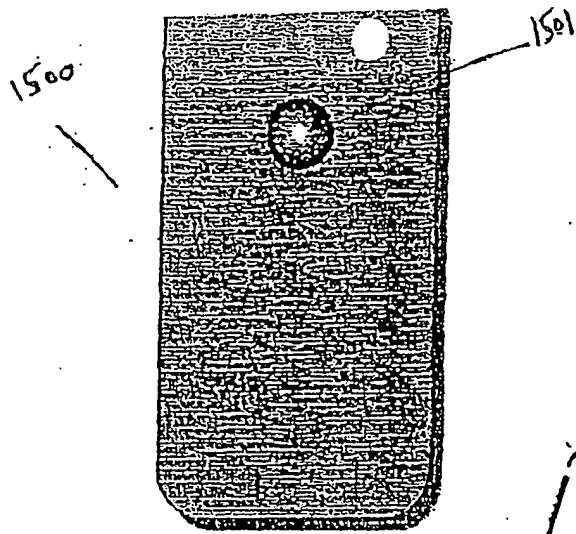


Fig. 15

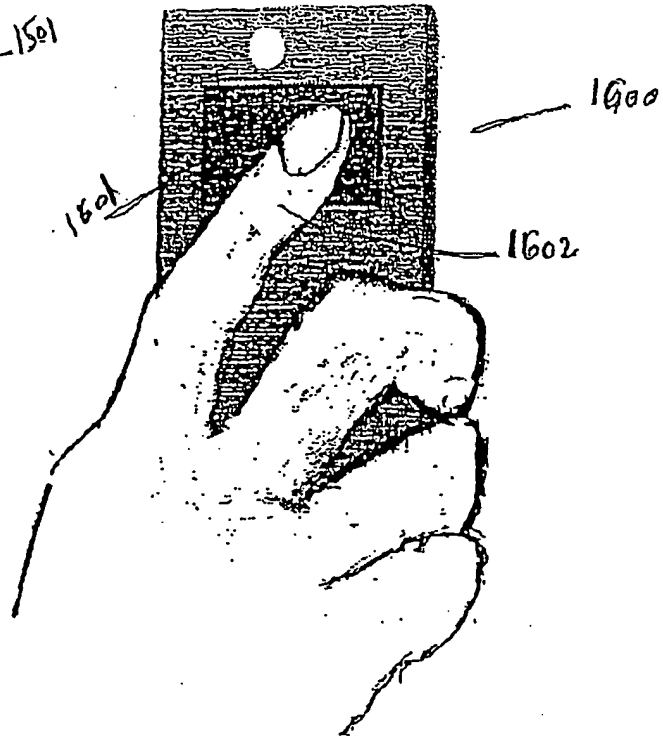


Fig. 16

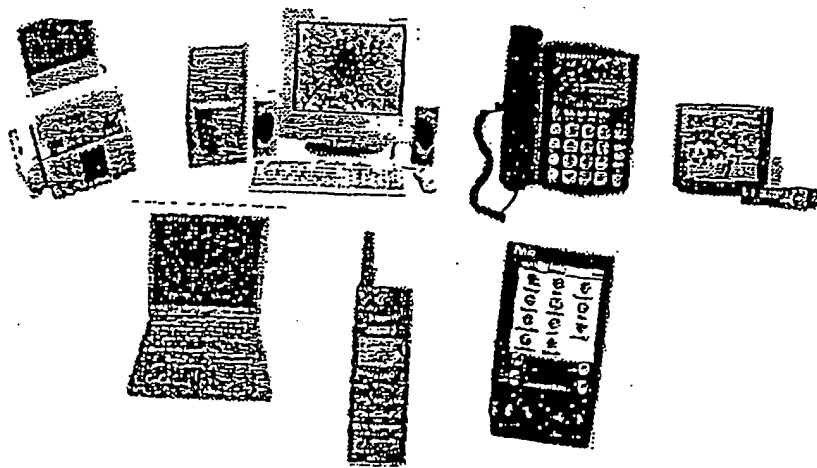
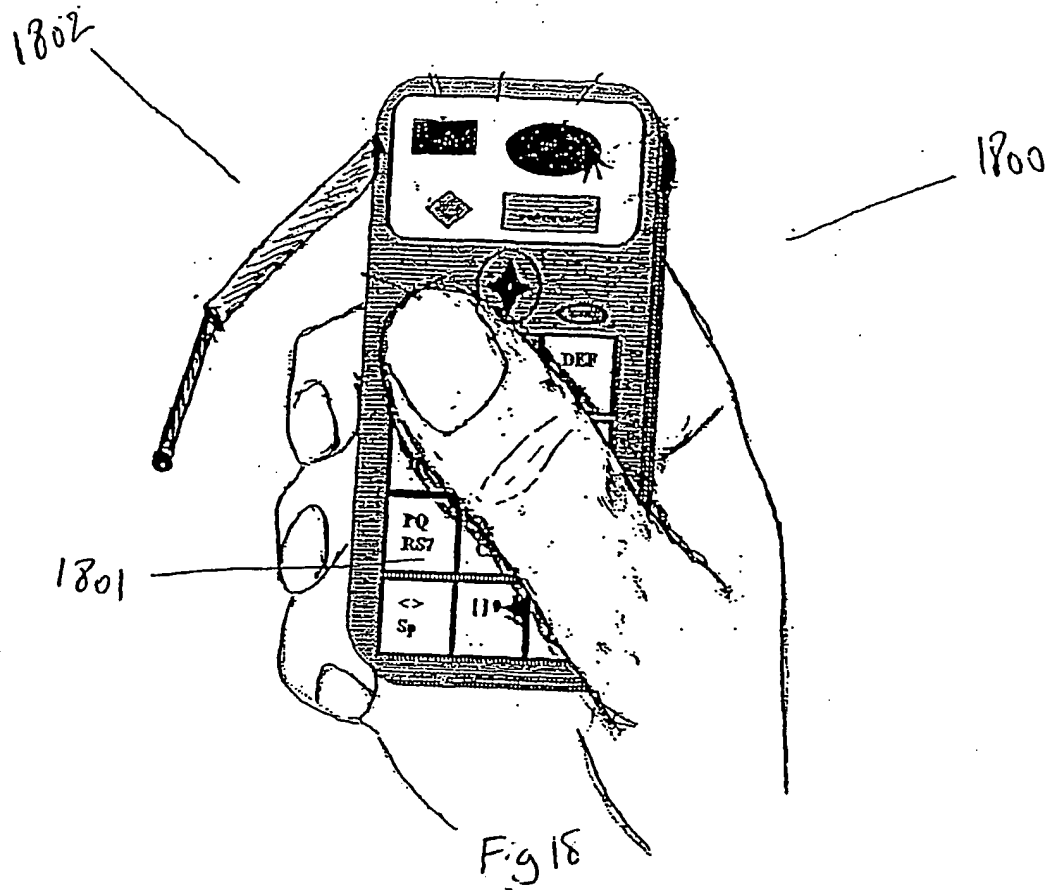


Fig. 17



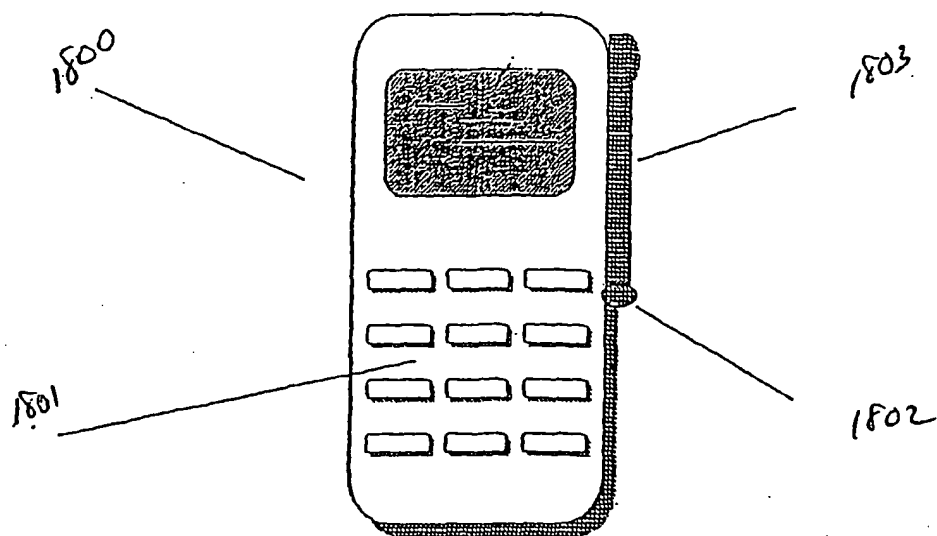


Fig. 18B

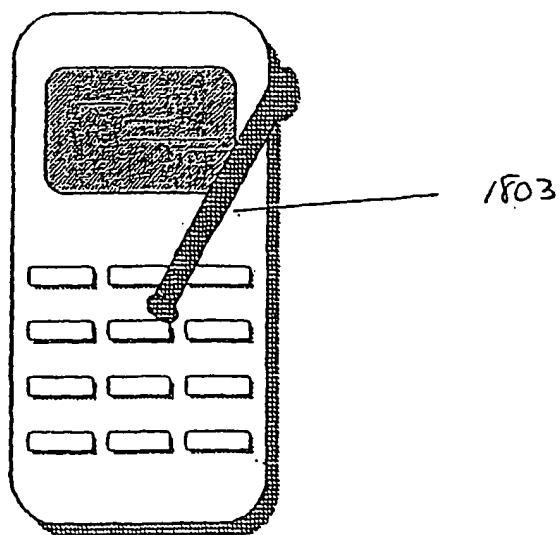


Fig. 18C

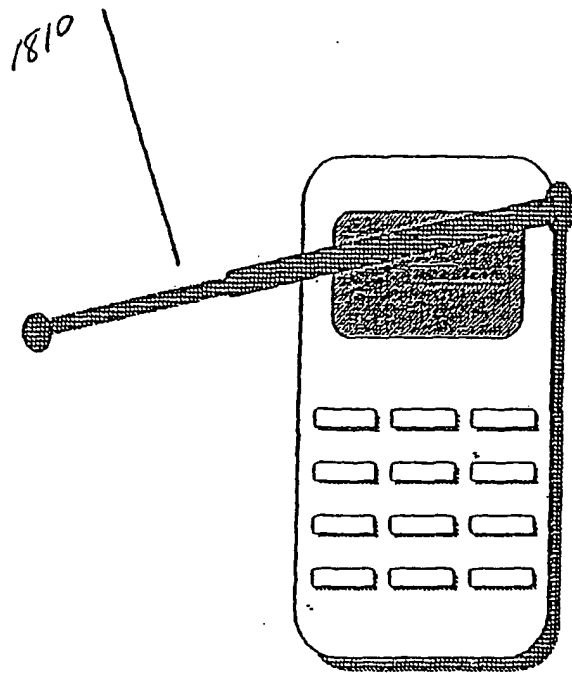


Fig 18D

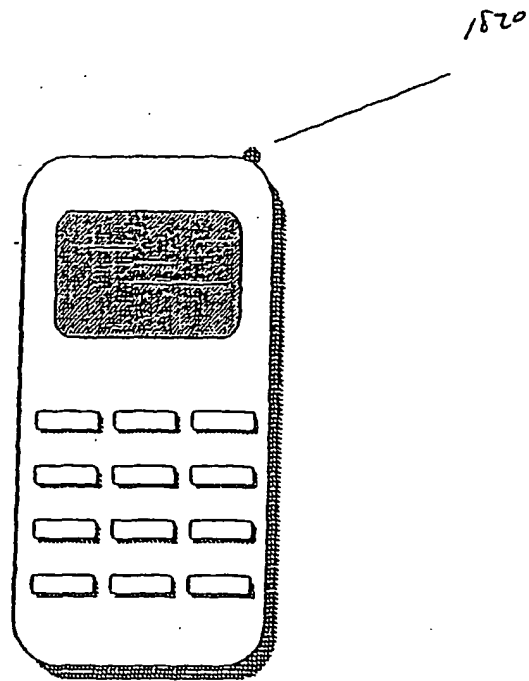


Fig. 18E

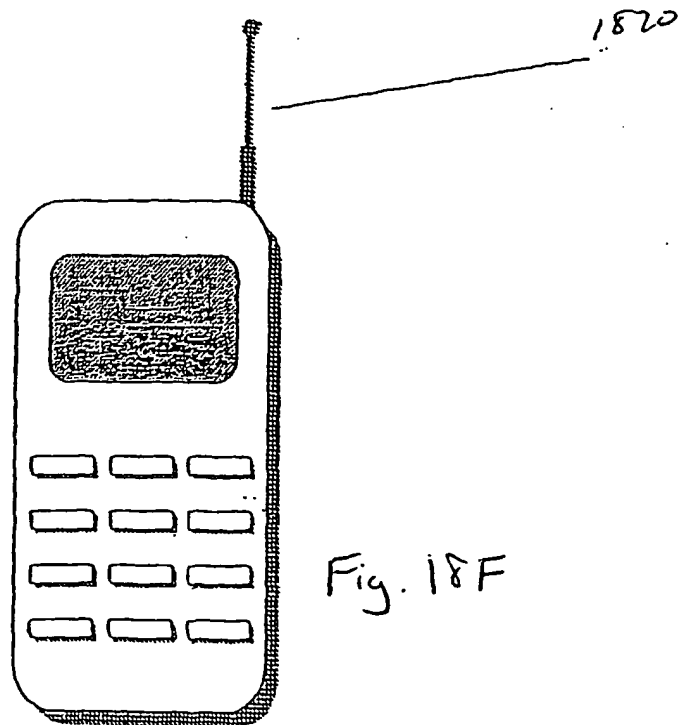
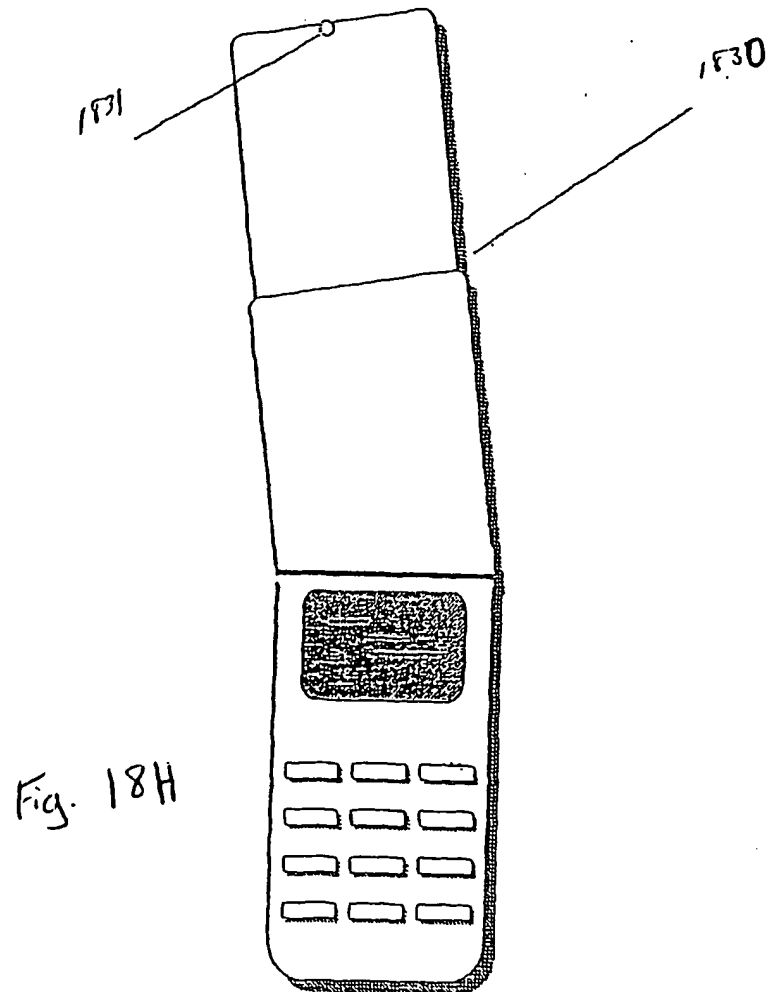
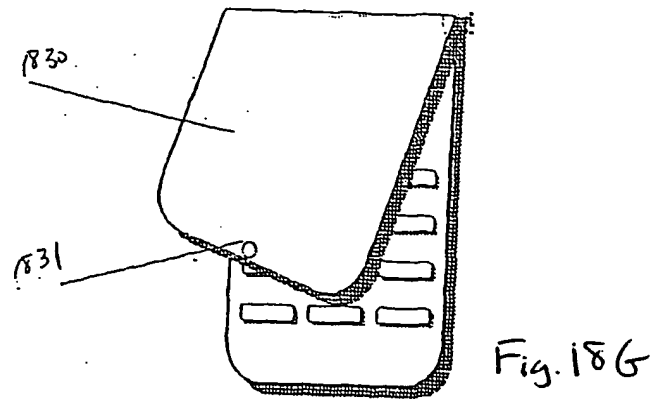


Fig. 18F



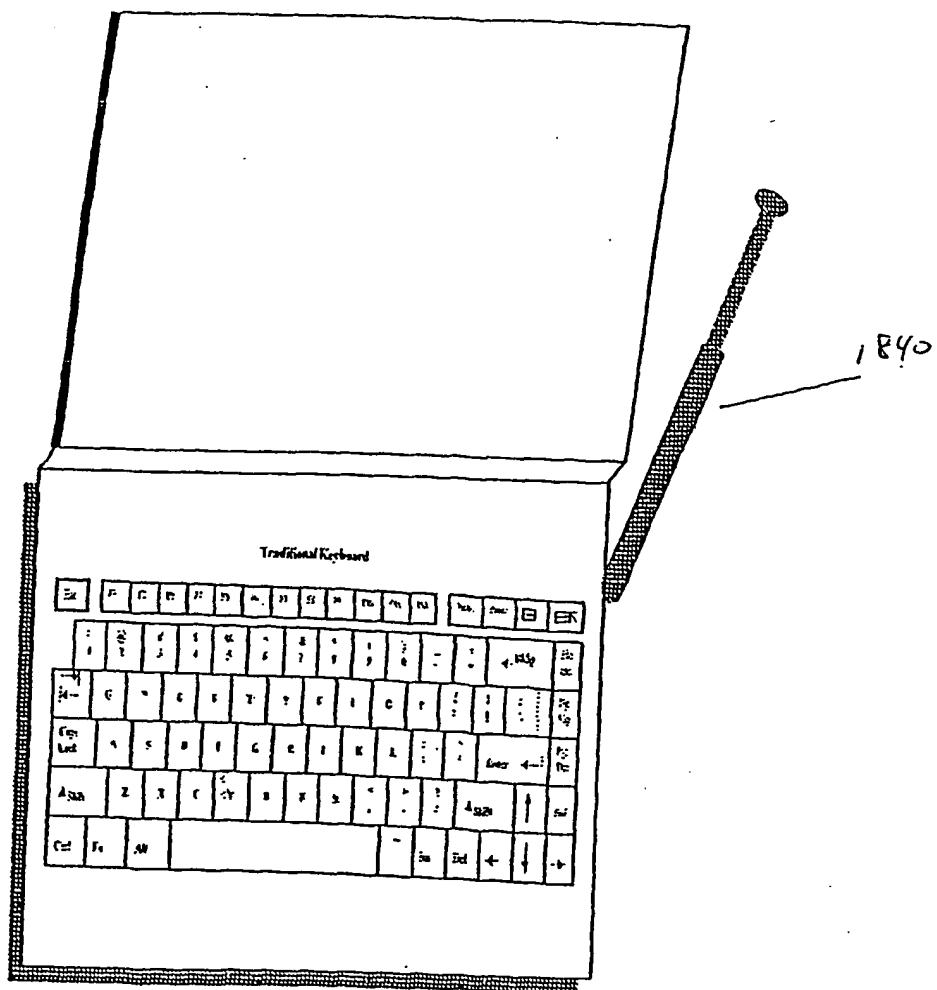
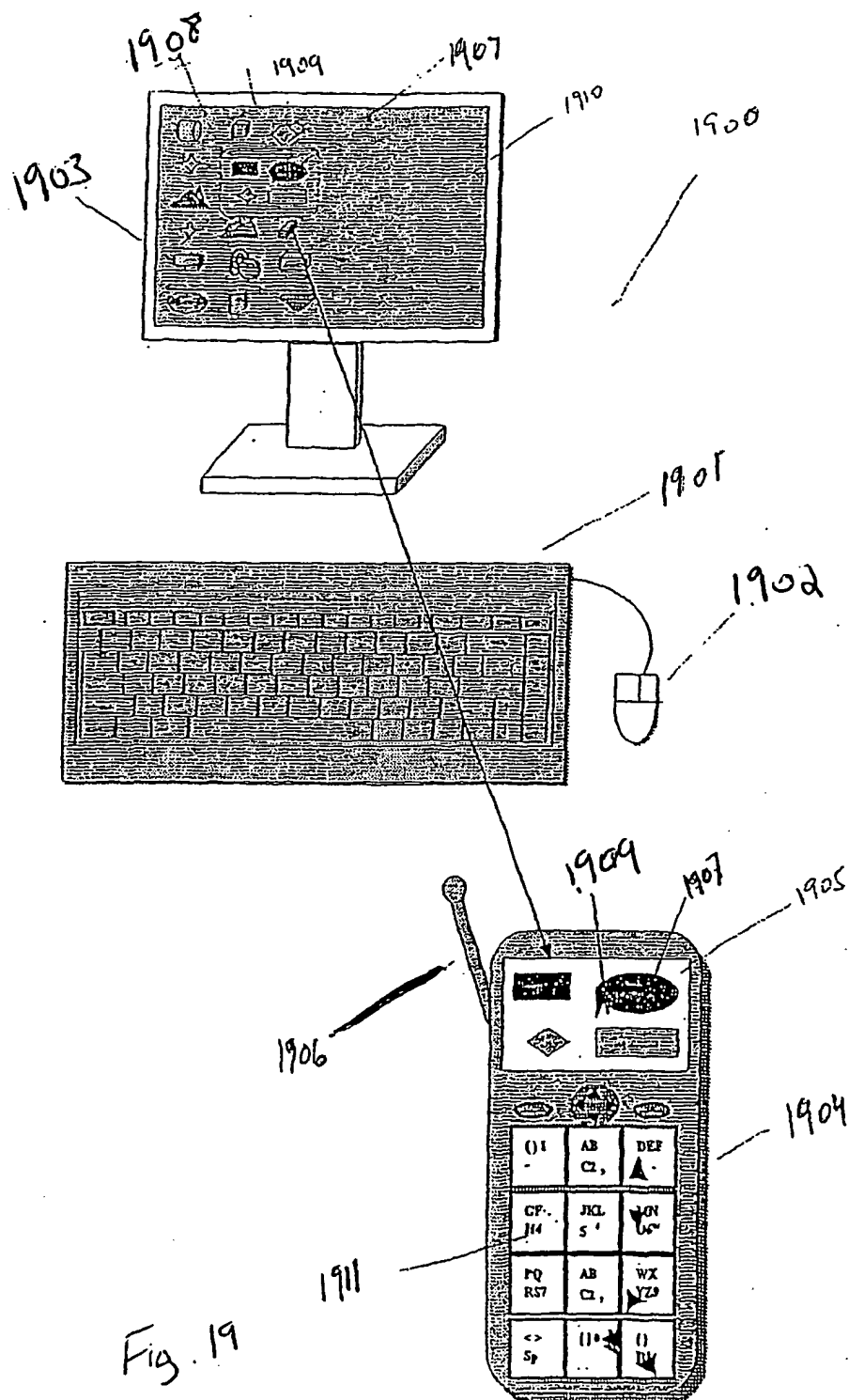
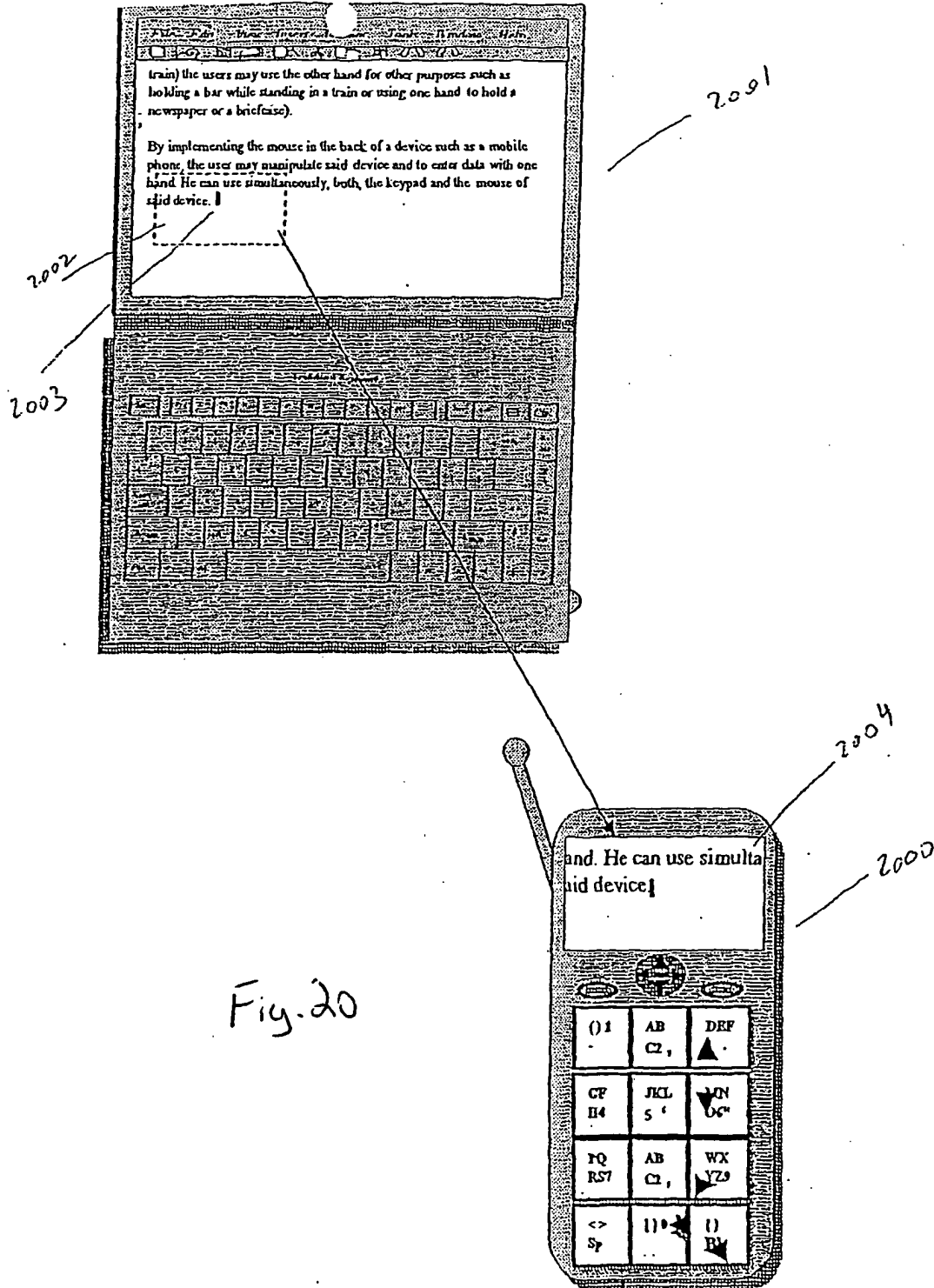
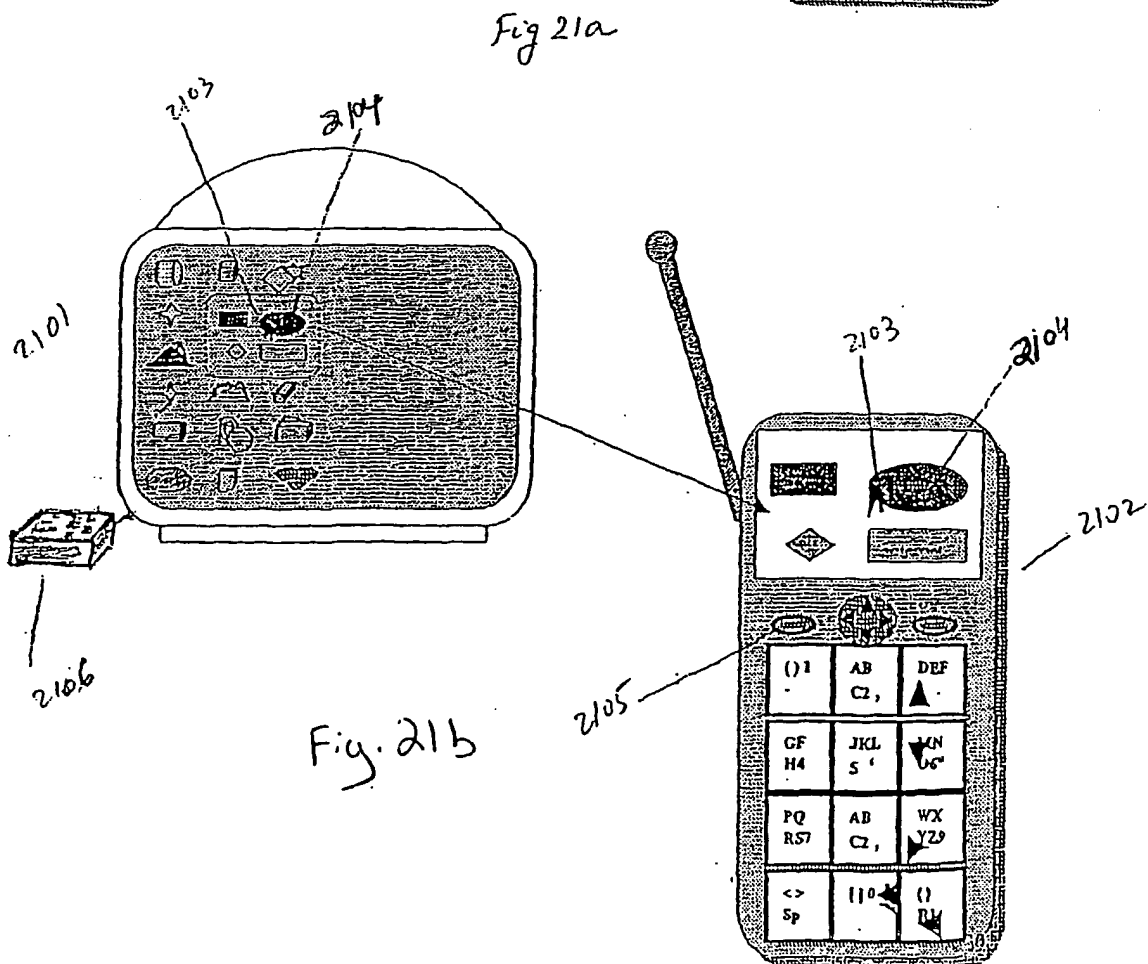
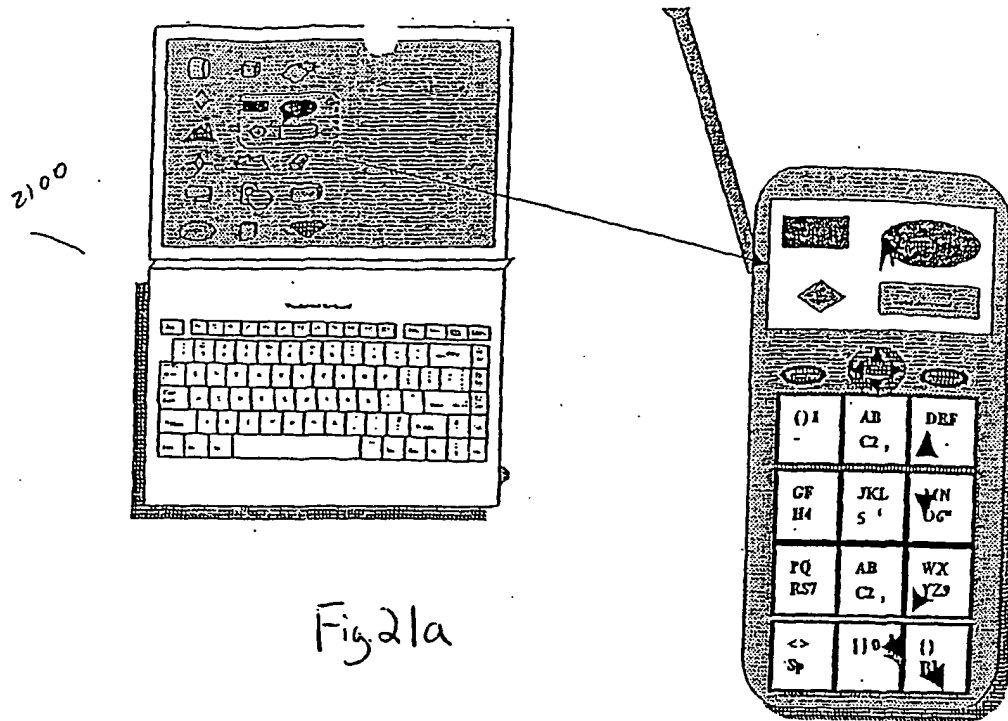


Fig. 18I







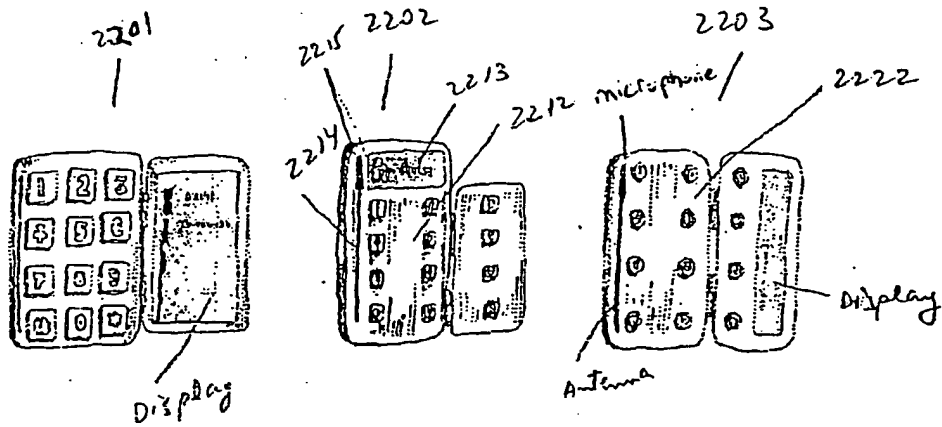


Fig. 22a

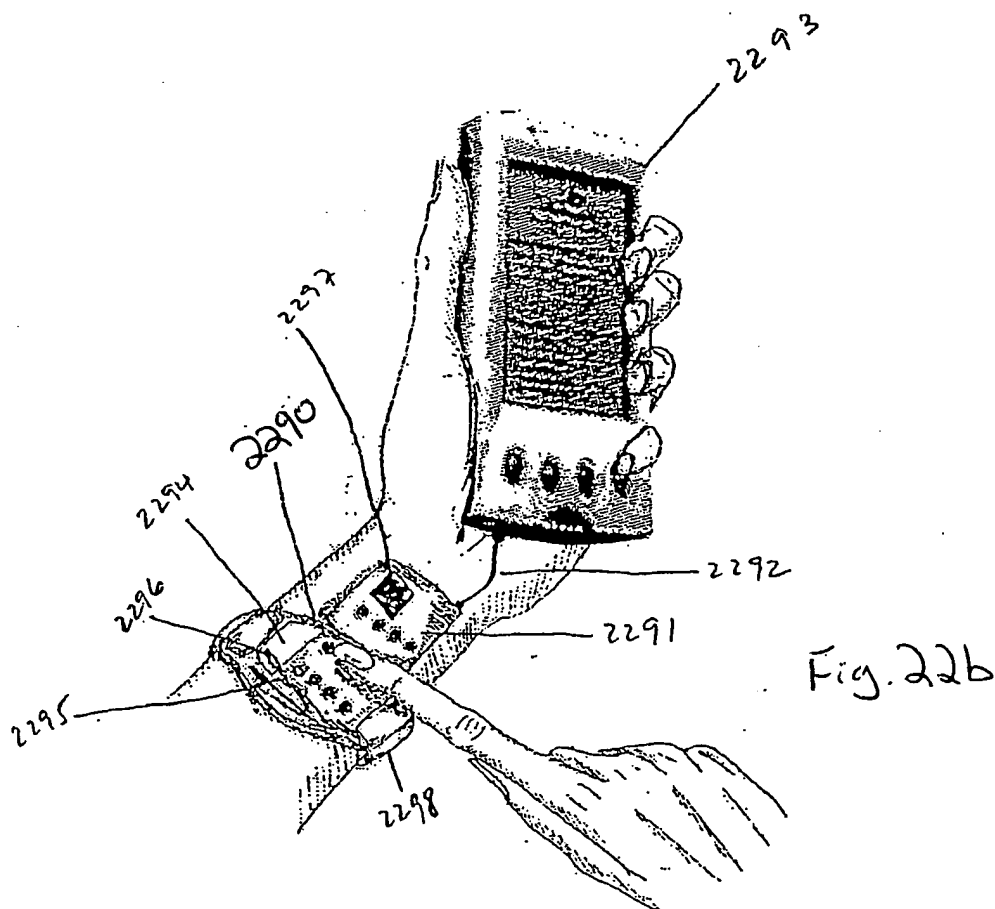
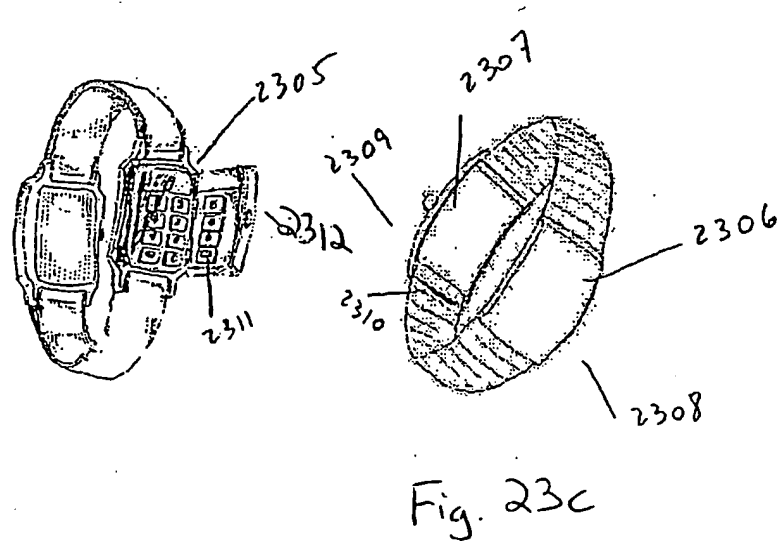
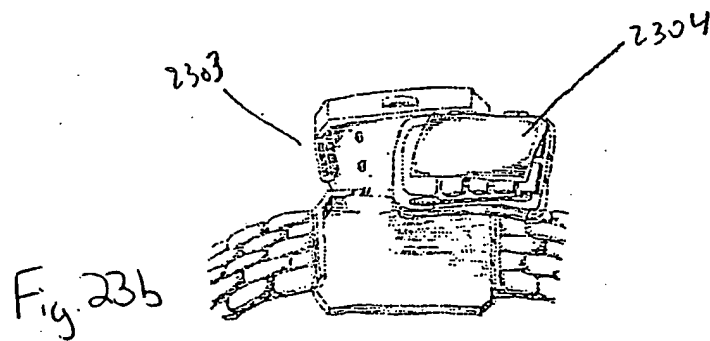
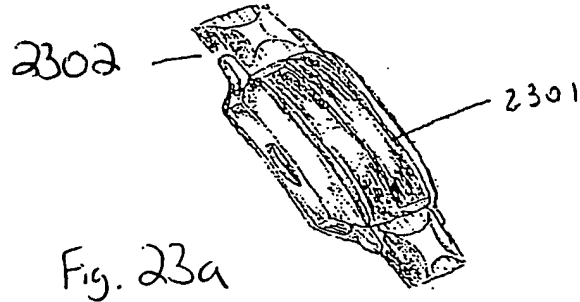
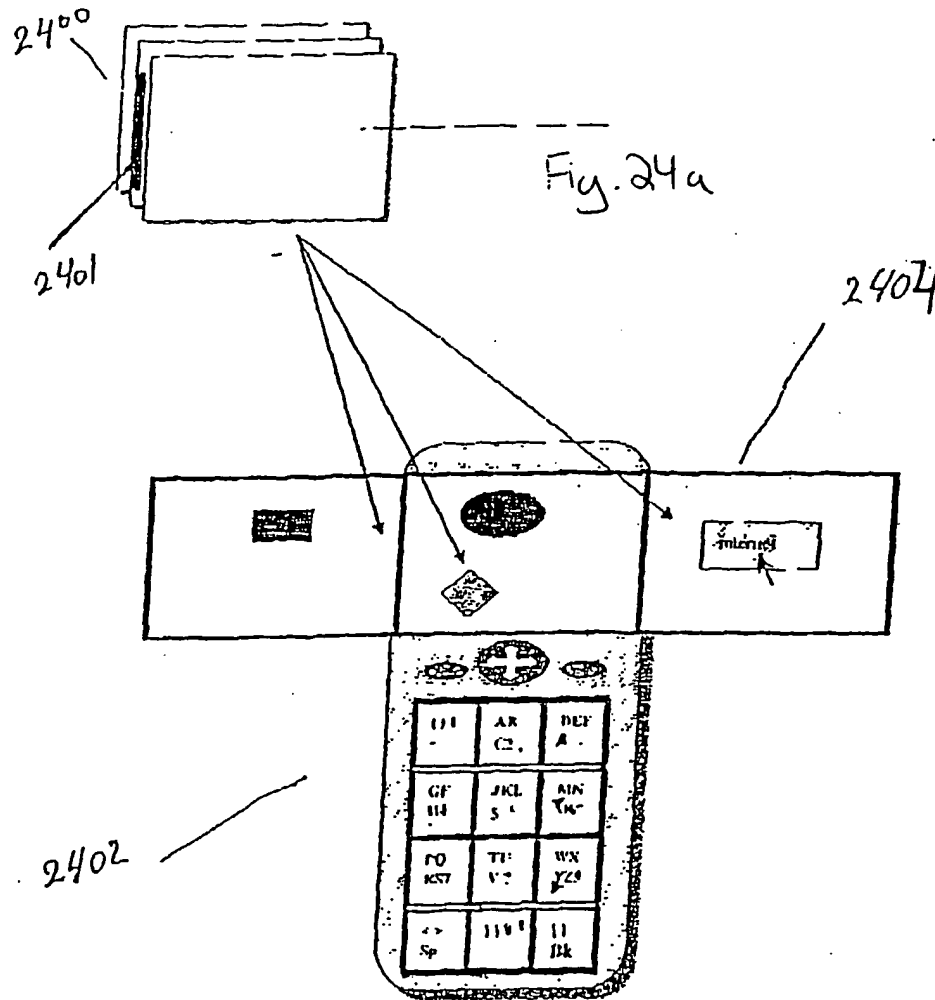
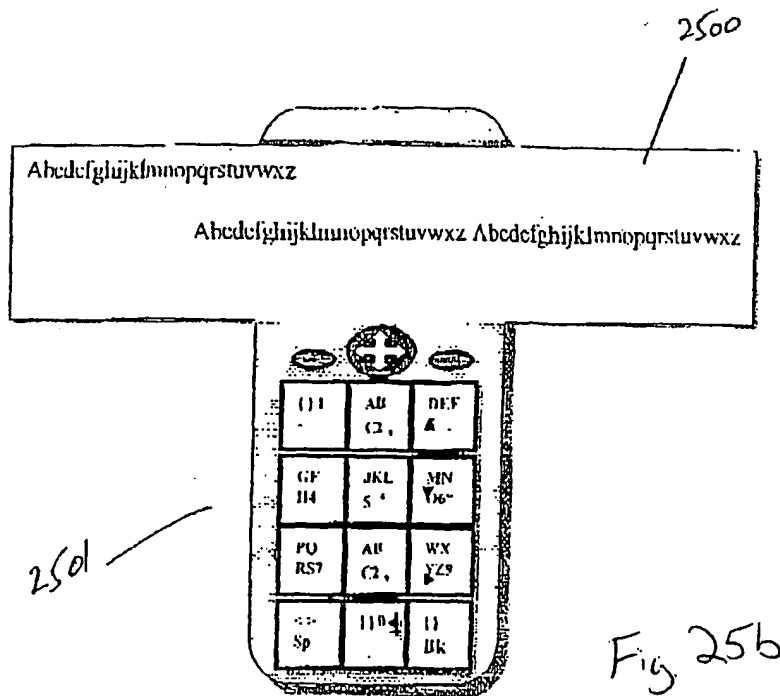
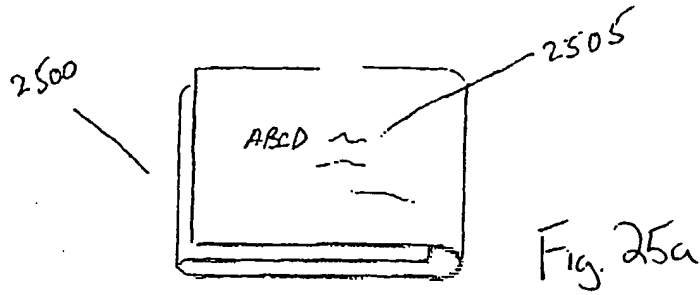


Fig. 22b







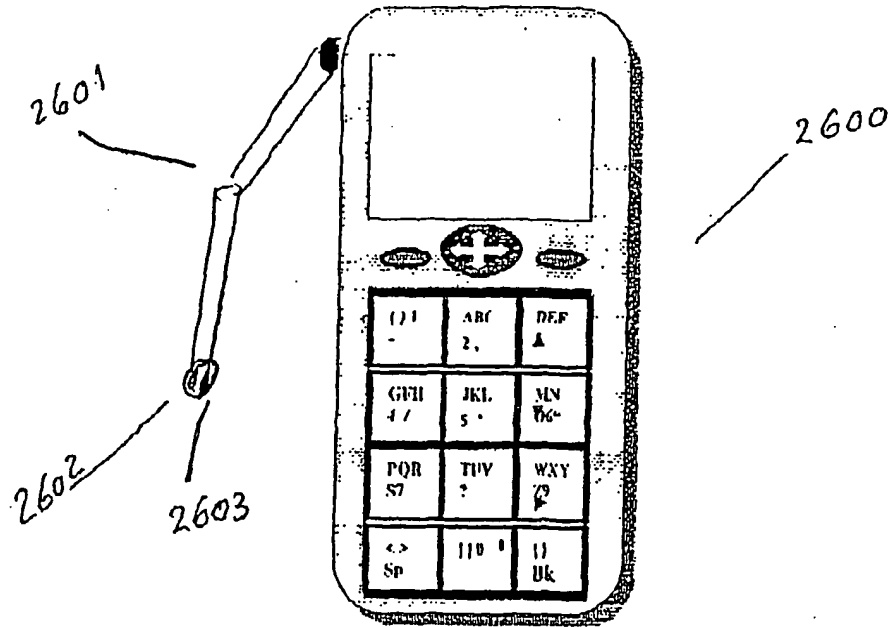
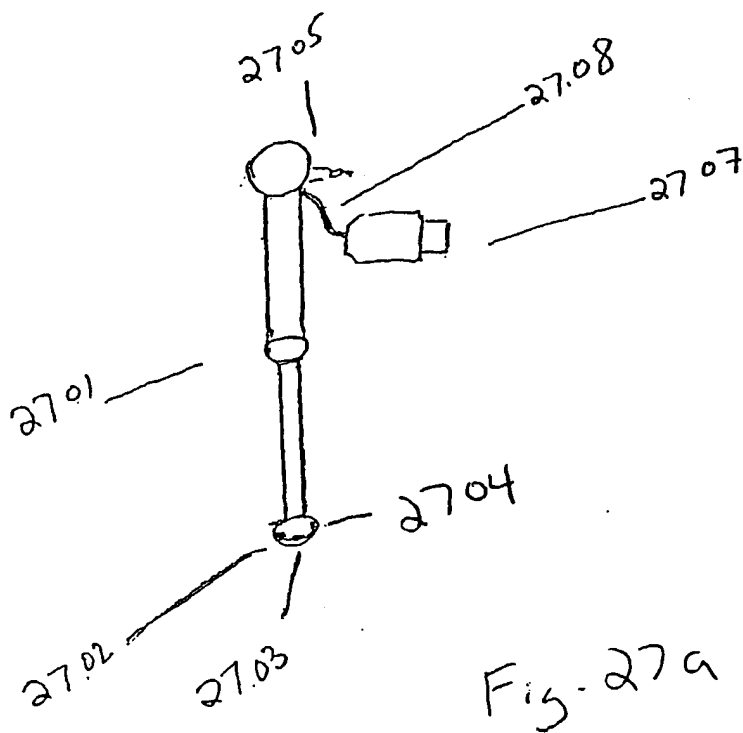
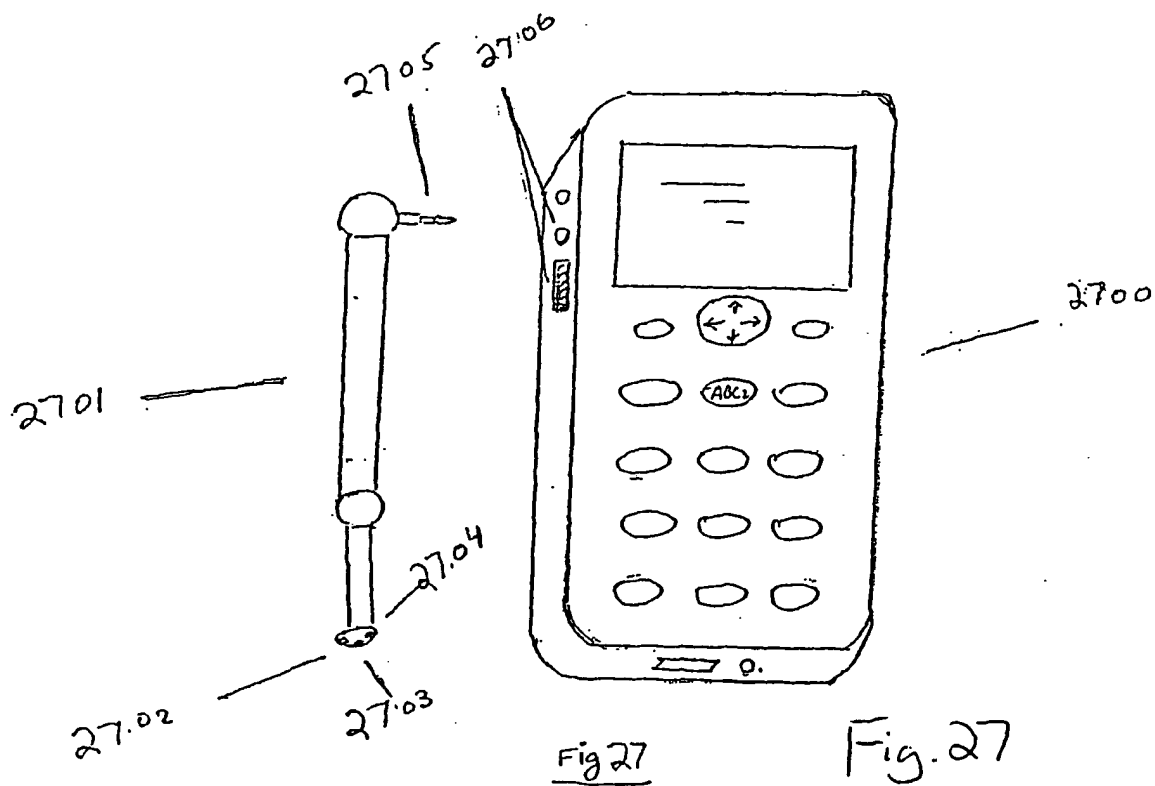


Fig. 26



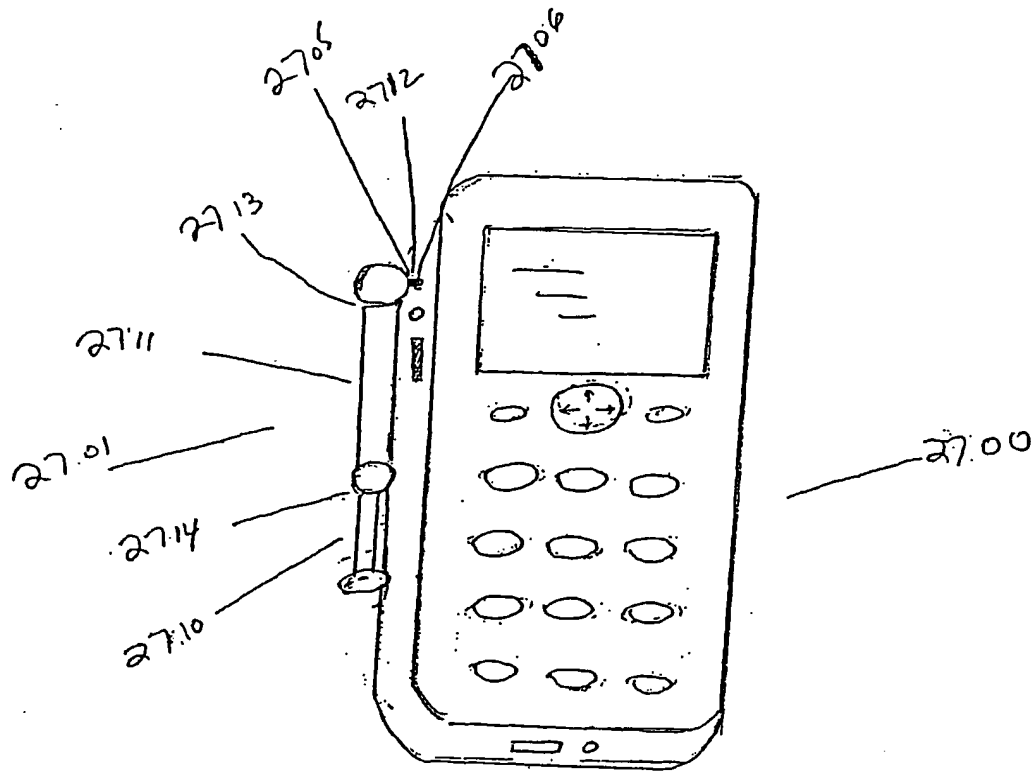


Fig. 27b

Fig. 27b

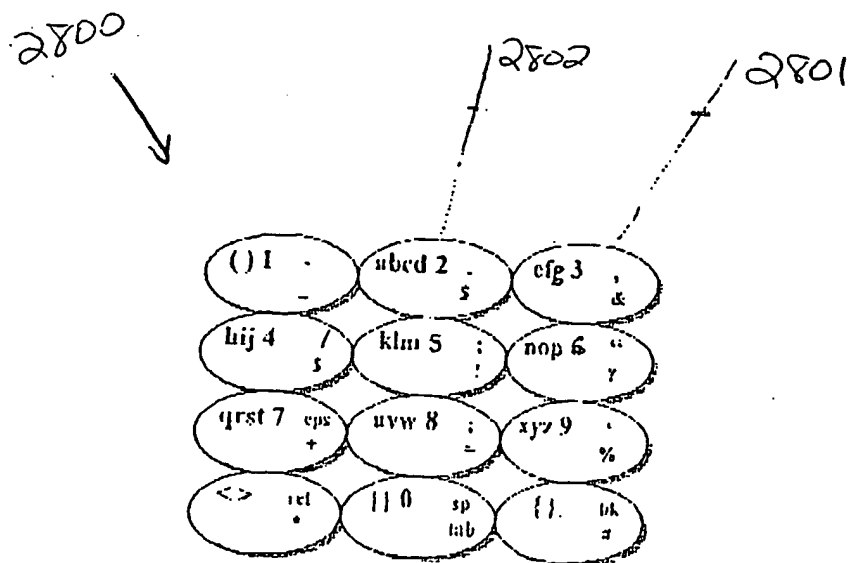


Fig. 28

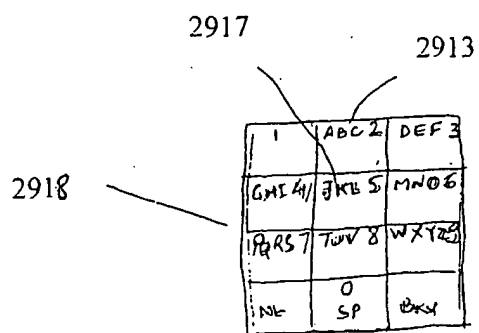
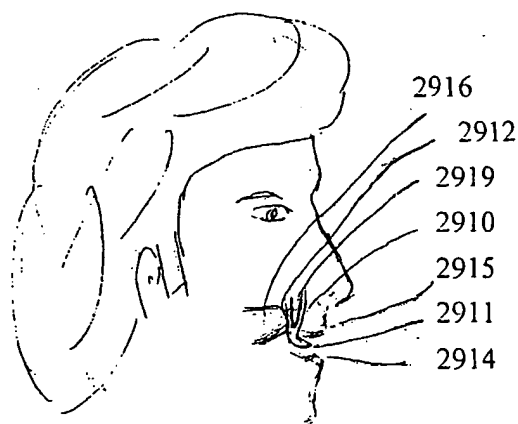
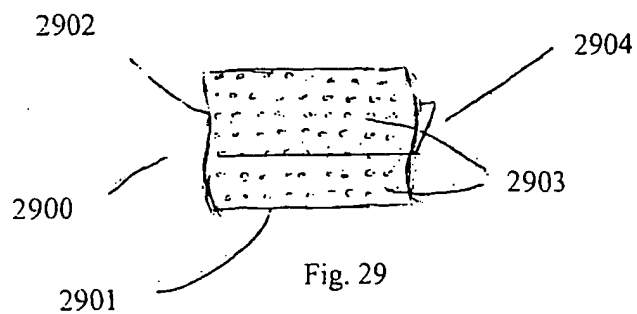


Fig. 29a

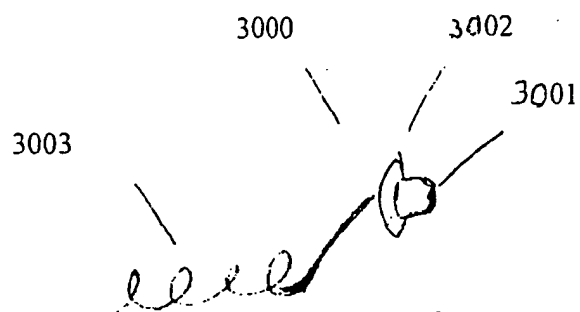


Fig. 30

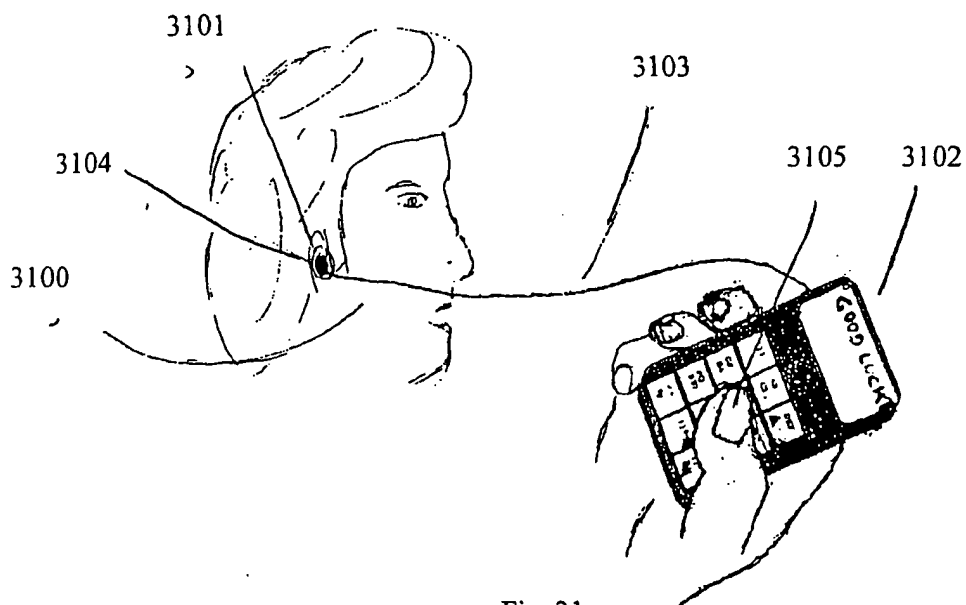


Fig. 31

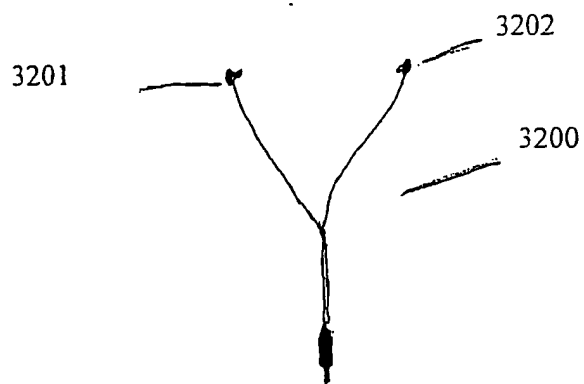
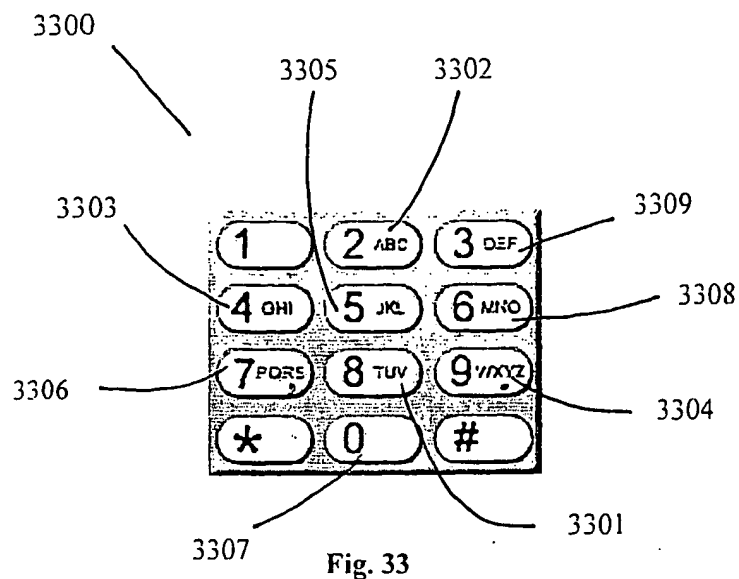


Fig. 32



3400

3402      3403      3404      3405

Words Dictionary (by characters)	Corresponding keys to press in a telephone-type numeric keypad	Corresponding phoneme sets	Corresponding speech models in the memory
And	263	and	#n
"	"	"	"
Ball	2255	bôl	#n+i
Dancing	3262464	Dansing	#n+j
Enter	36837	Enter	"
"	"	"	"
Trying	879464	Trīing	n+k
Tea	832	Tē	#n+l
Teabag	832224	Tēbag	"
Tee	833	Tē	#n+l
Young	96864	Yung	"
Zen	936	Zen	#n+m

3401

Fig. 34

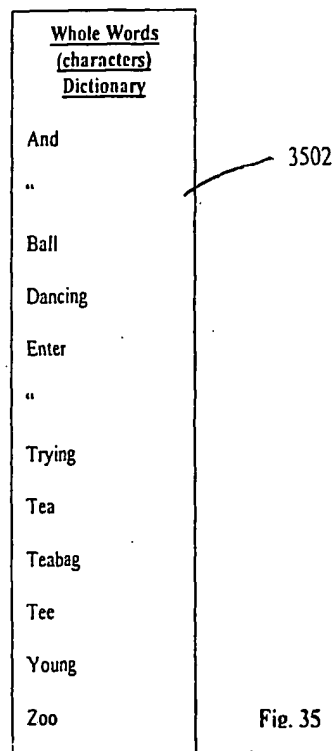
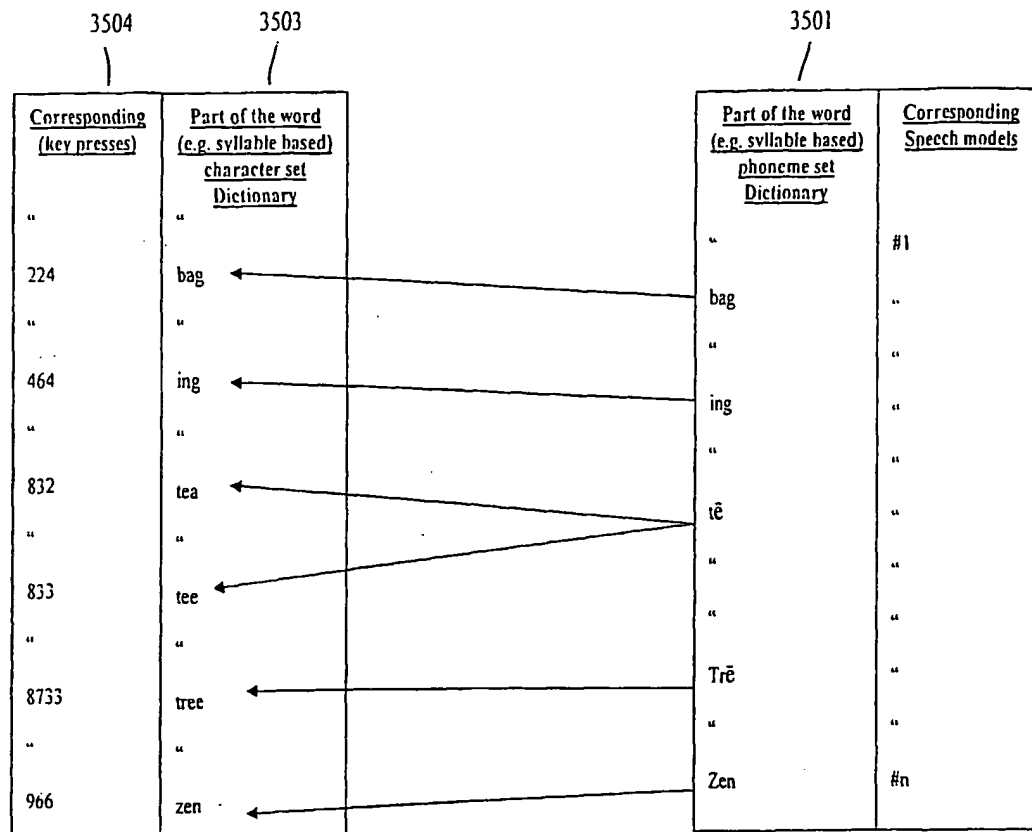


Fig. 35

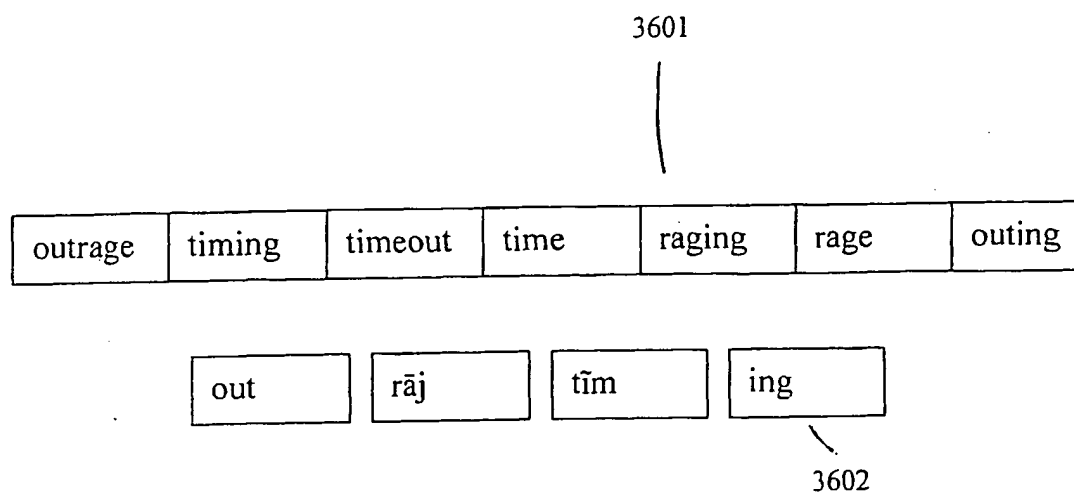


Fig. 36

A Speech/phonemes at the beginning of a syllable in a word	B Characters sets having pronunciation at least substantially similar to the phonemes set of A	C words having portions (e.g. syllables) with starting: phoneme-sets of A or characters sets of B
ta	ta,	tap, tango
tā	ta, tai,	take, tailor
tā	tas,	taste
tô	ta, tau	talk, taupe
top	top	Top
te	te	tent
tī	tī	tilt
tip	tip	tippet
tī	ti, tie, ty	re-tire ("ti" in the beginning of the middle syllable), tiebreak, type
tē	t, tee, tea, ty	t, teeth, team, security
tōō	to, too, two	to, tooth, two
trī	tri, try	tried, re-try
thī	thi, thir, thirst	thin, thirst, thirst
thrō	thro	throw
ing	in	trying

Fig. 37

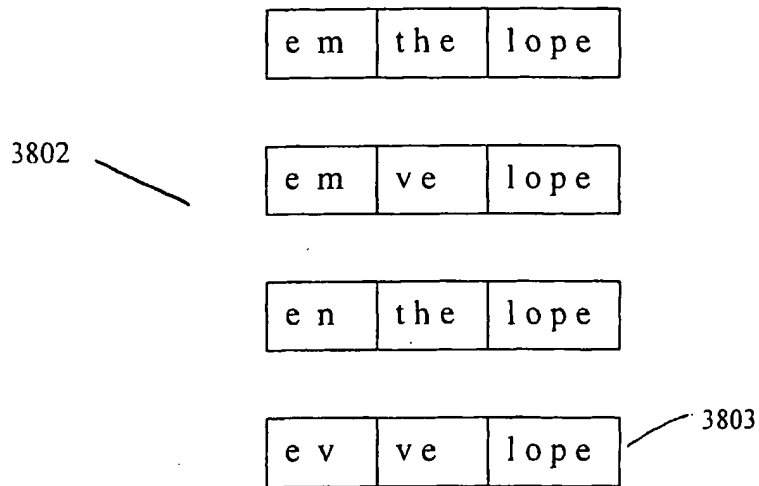
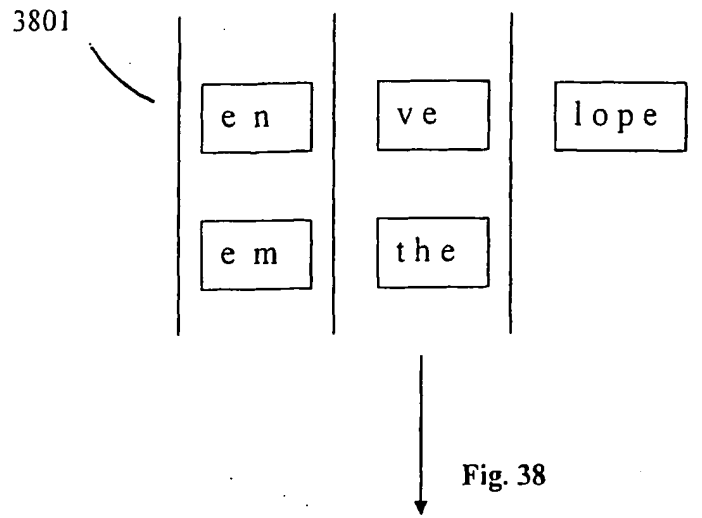


Fig. 39

4001	4004	4005	4006	4007	4010
Phoneme-Set	Consonant	Vowel	Consonant	Word	Number of Key Presses
<u>T</u>					
t	t			thir-s-t	3
ta	t	a		ta-riff	2
tab, tac, .....	t	a	b	tab-let	2
tā	t	ā		s-ta-ble	3
tār, .....	t	ā	r	s-tair	2
te	t	e		te-nan-t	3
tem, ter, ....	t	e	m	tem-pe-ra-ture	4
tē	t	ē		tea-bag	2
tēch, tēm, ....	t	ē	ch	teach-ing	2
ti	t	i		mul-ti-tude	3-4
tīl, tip, .....	t	i	l	un-tīl	2
to	t	o		to-ma-to	3
tor,	t	o	r	tor-na-do	3
tu	t	u		s-tu-dy	3
tuf, tud, .....	t	u	d	s-tuff/s-tuf-f	2-3
tōō	t	ōō		to	1
tōōd, tōōl, .....	t	ōō	l	un-der-s-tood	4
tyōōn	t	yōō	n	tune/tu-ne	1-2
<u>U</u>					
yōō		yōō		u-ni-ver-sal	4
yōōz		yōō	z	use/u-se	1-2
un, um, ul, ....		u	n	un-der	2
<u>V</u>					
Similar principles as for "T"					
<u>TH</u>					
Similar principles as for "T"					

Fig. 40

Phoneme-Set	Consonant	Vowel	Word	Number of Key Pressees
<b><u>T</u></b>				
t	t		thi-r-s-t	4
ta	t	a	ta-ri-f-f	4
tā	t	ā	s-ta-b-le	4
te	t	e	te-na-n-t	4
tē,	t	ē	tea-ba-g	3
ti	t	i	mu-l-ti-tu-de	5
to	t	o	to-ma-to	3
tu	t	u	s-tu-dy	3
tōō	t	ōō	to	1
tyōō	t	yōō	tu-ne	2
<b><u>U</u></b>				
	vowel	consonant		
yōōz	yōō		u-se	2
un, um, ul, ....	u	n	un-dē-r	3
<b><u>V</u></b>				
Similar principles as for "T"				
<b><u>TH</u></b>				
Similar principles as for "T"				

Fig. 41

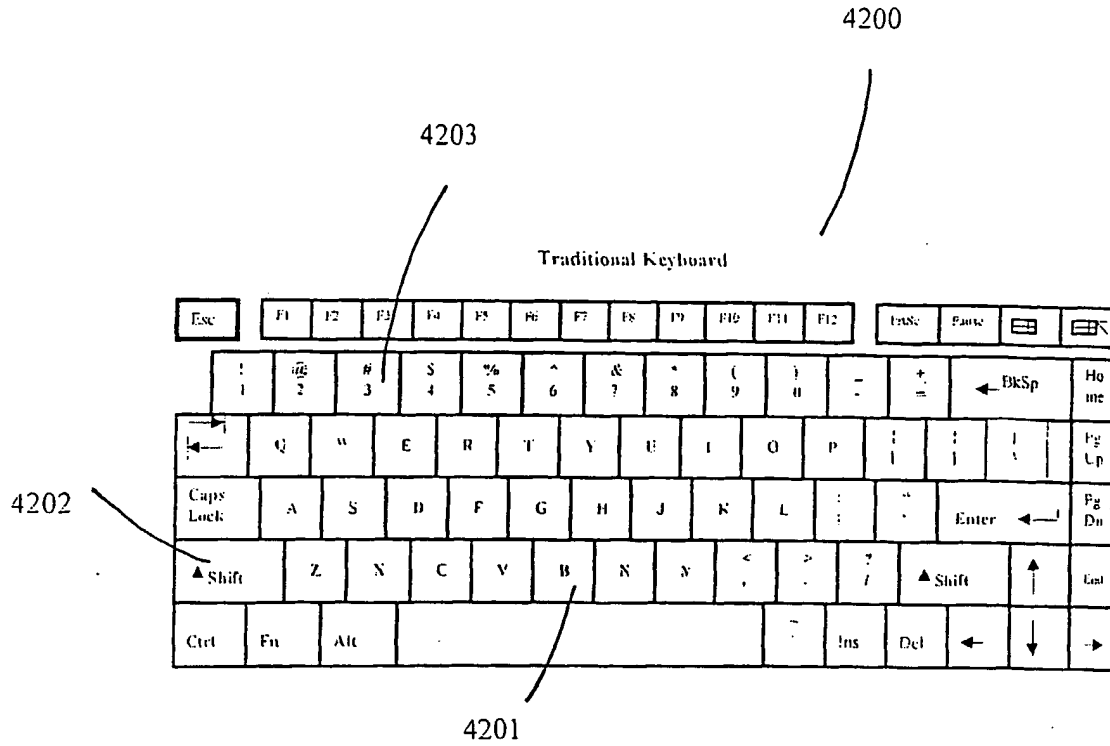


Fig. 42

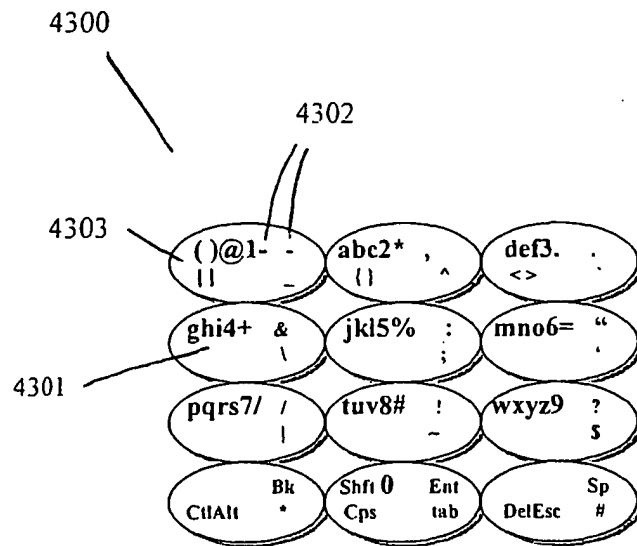


Fig. 43

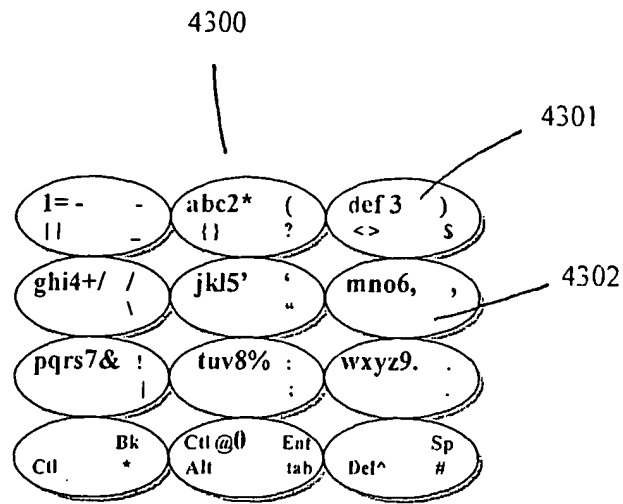


Fig. 43a

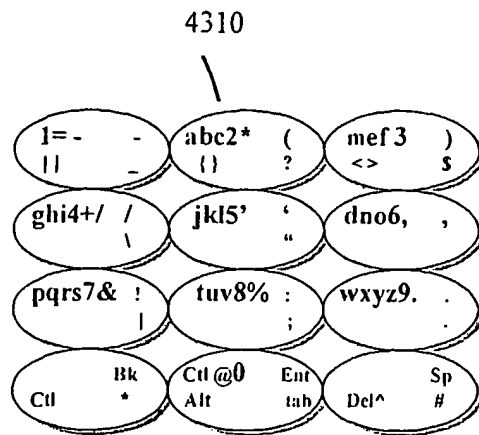


Fig. 43b

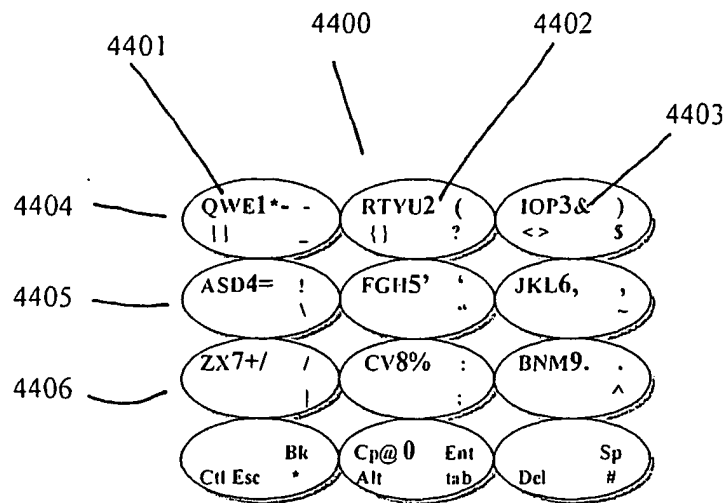


Fig. 44a

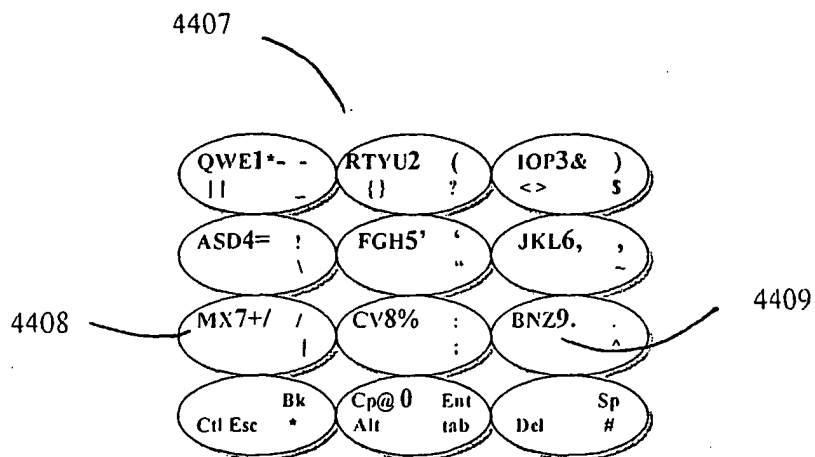


Fig. 44b

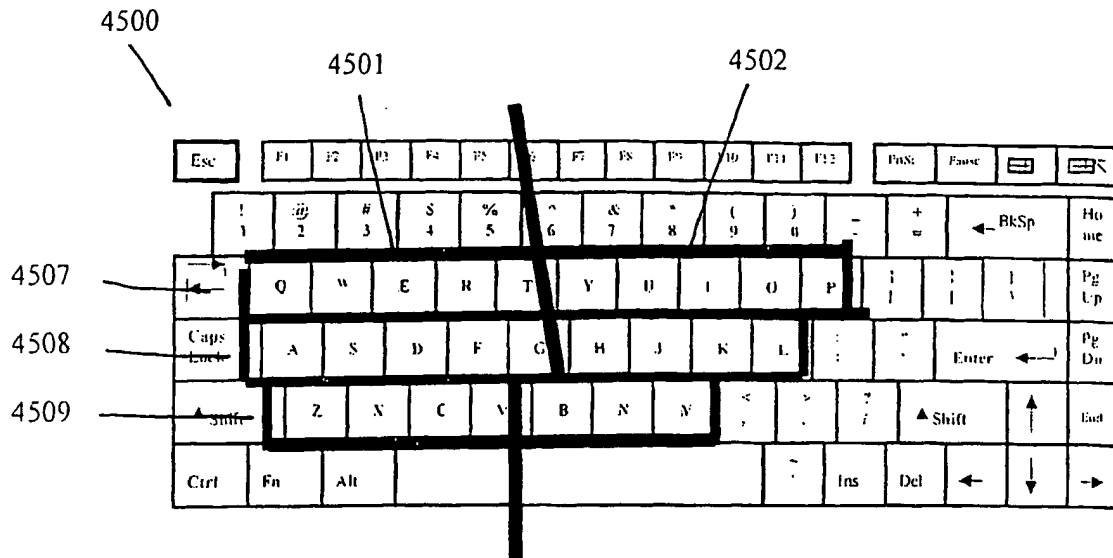


Fig. 45

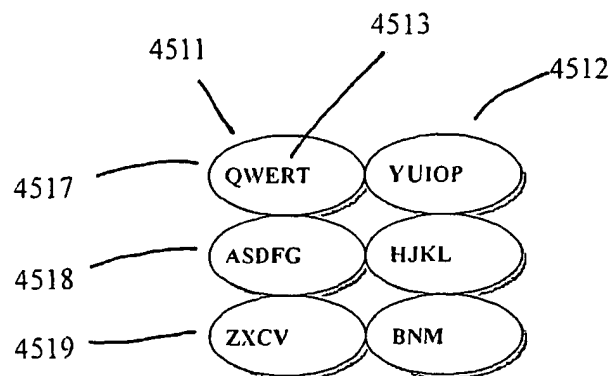


Fig. 45a

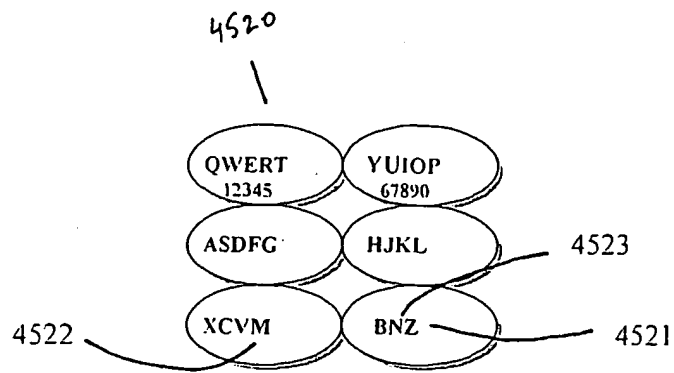


Fig. 45b

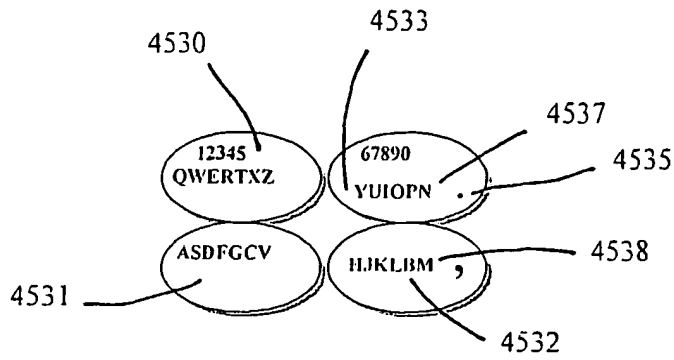


Fig. 45c

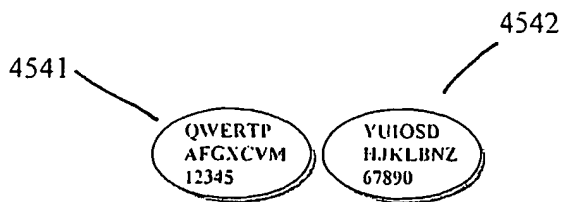


Fig. 45d

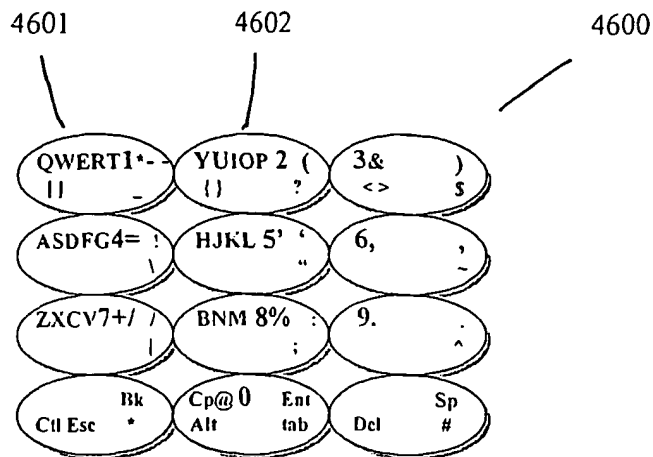


Fig. 46a

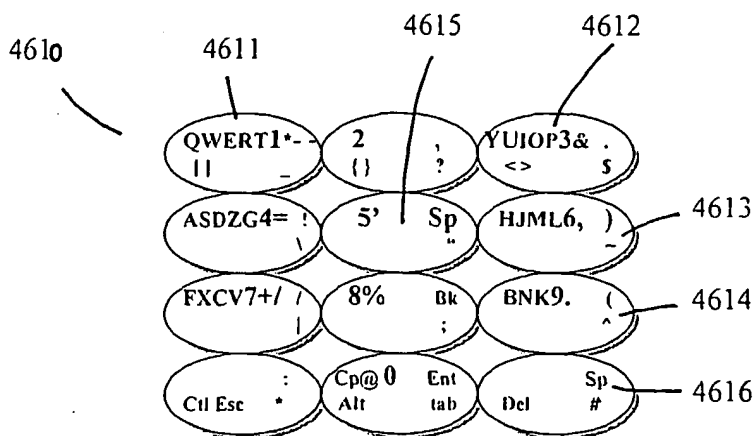


Fig. 46b

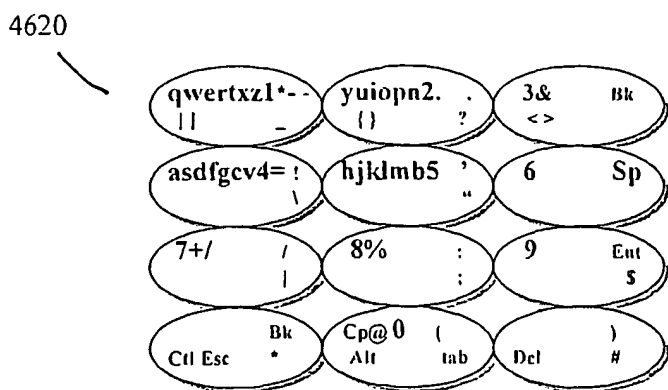
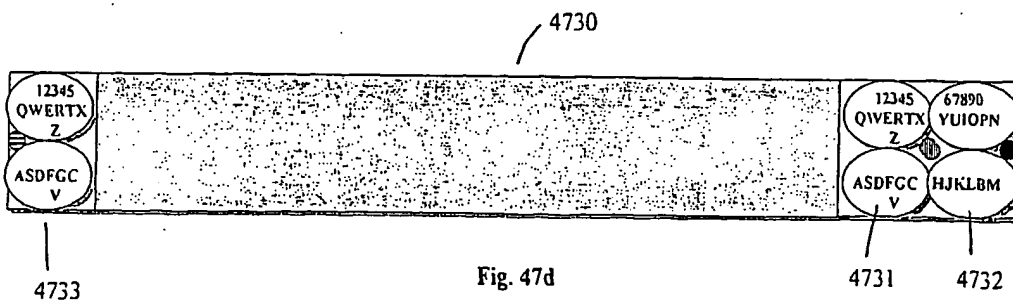
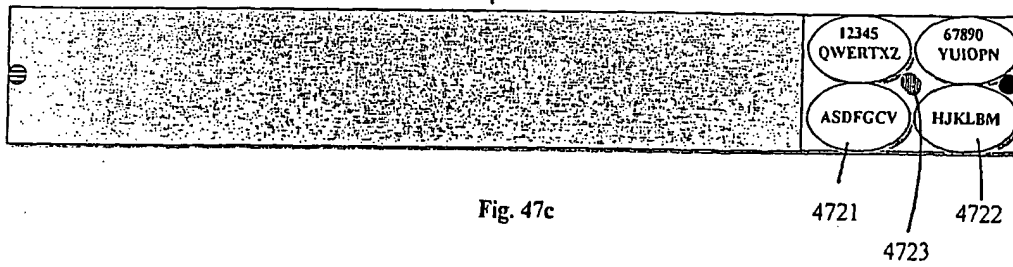
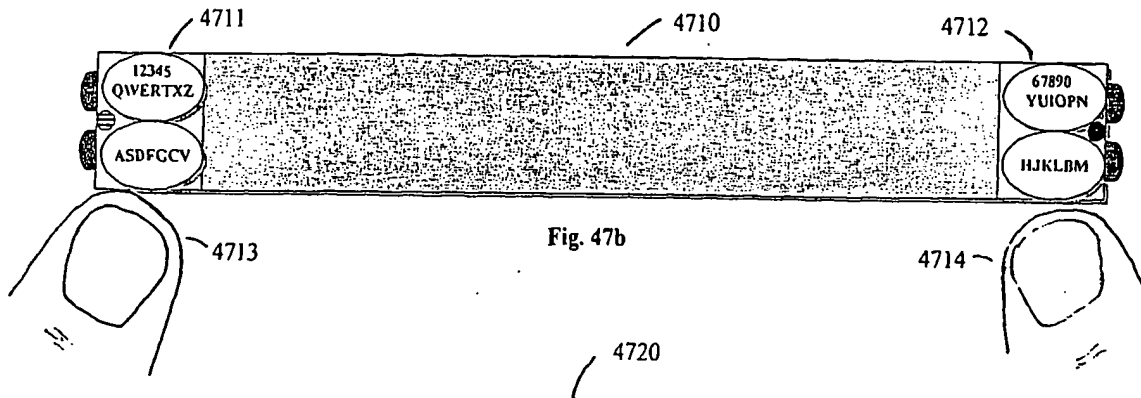
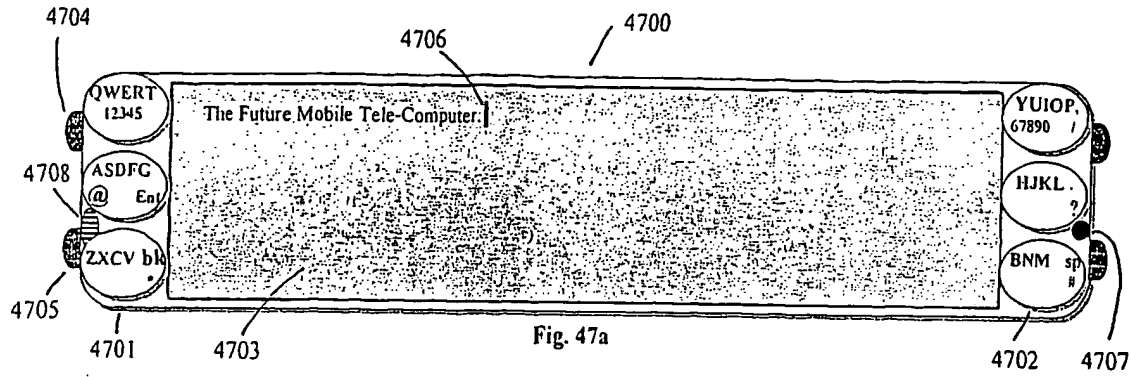


Fig. 46c



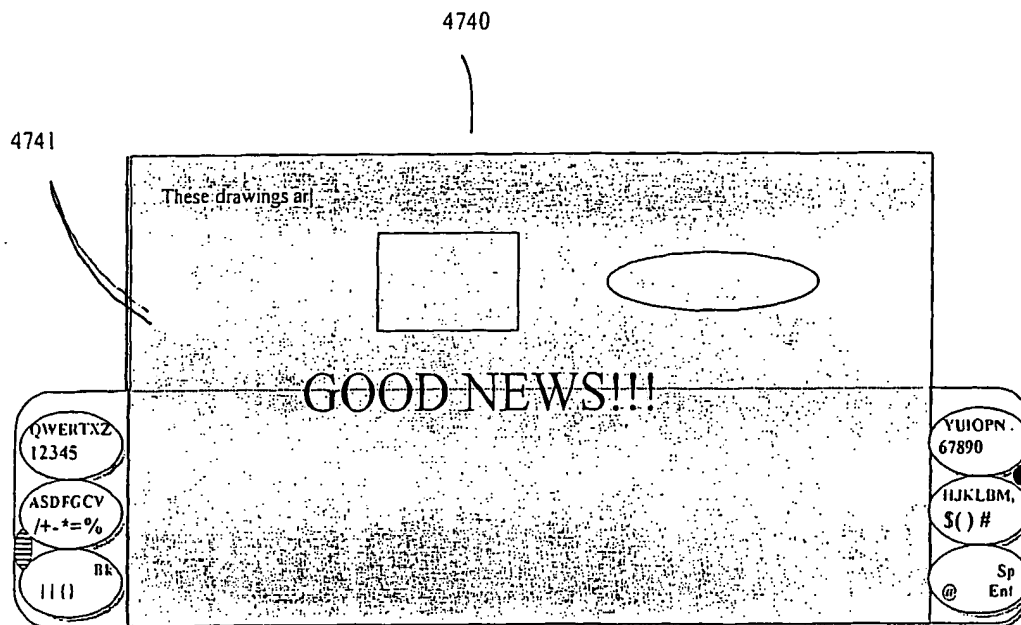


Fig. 47e

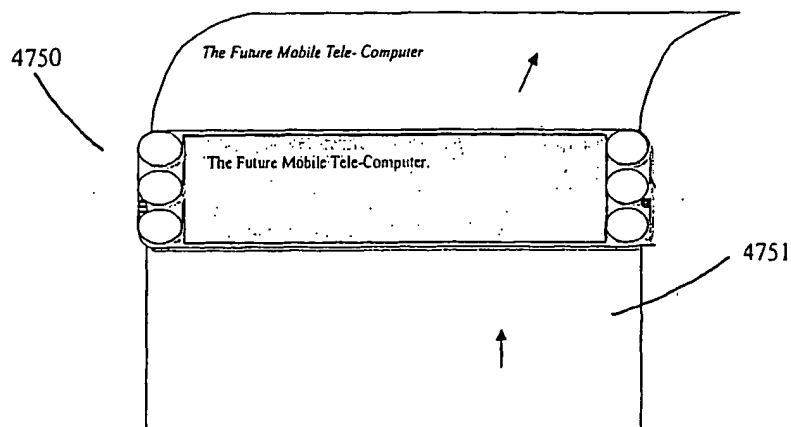


Fig. 47f

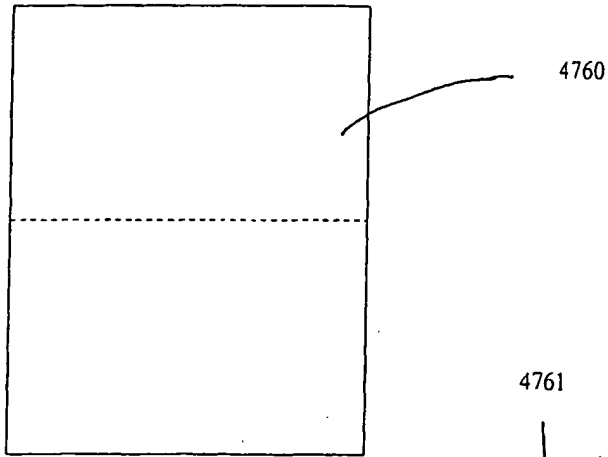


Fig. 47g

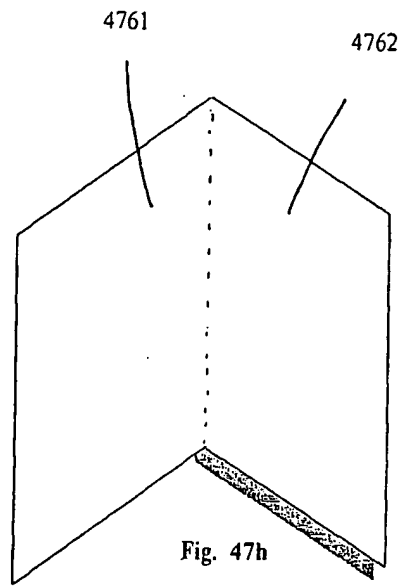


Fig. 47h

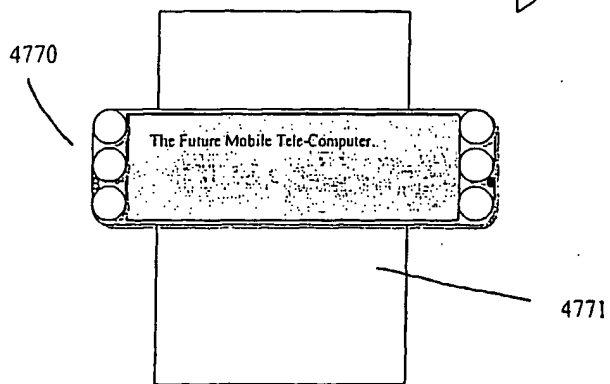


Fig. 47i

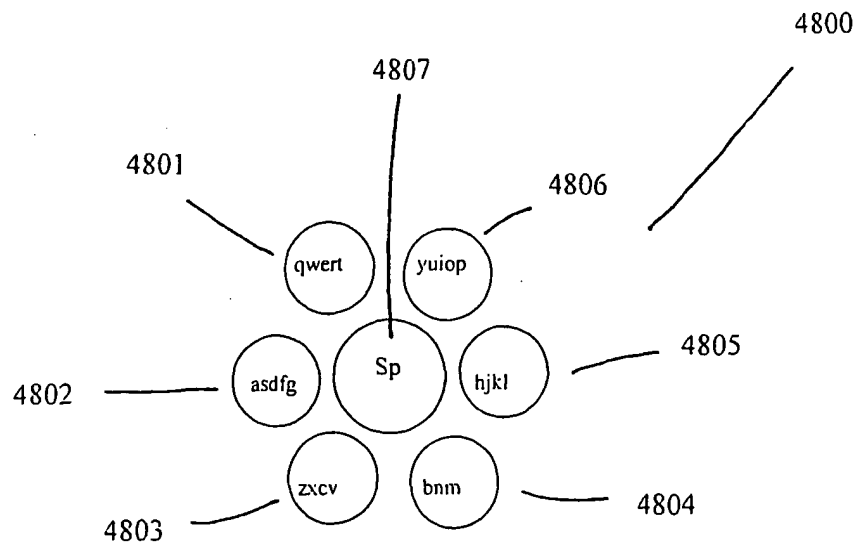
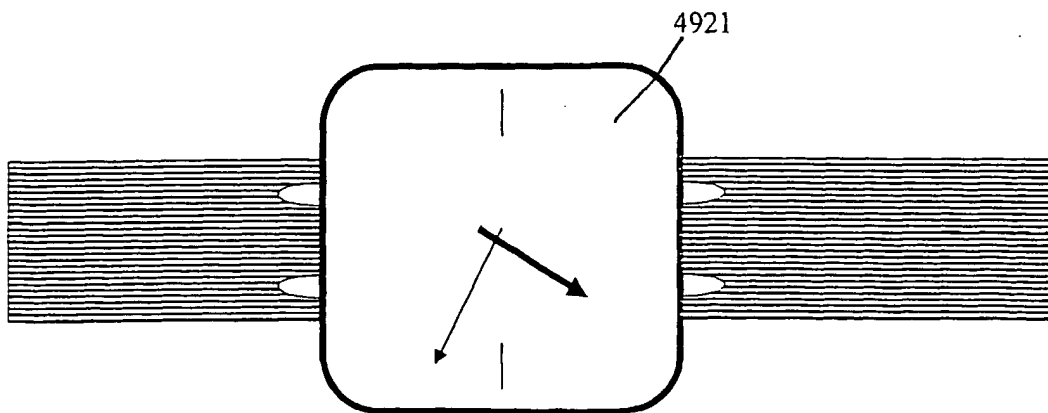
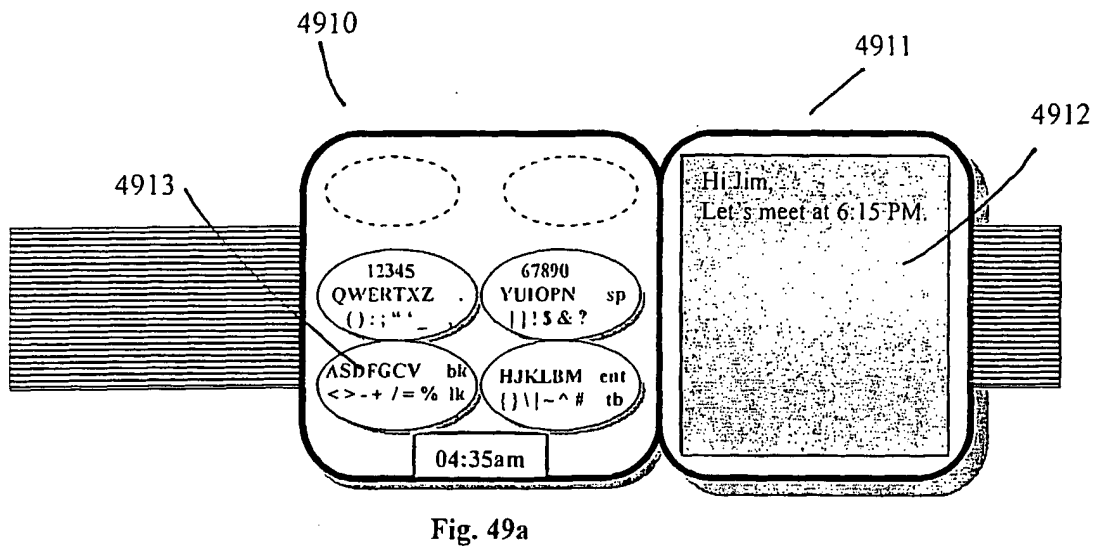
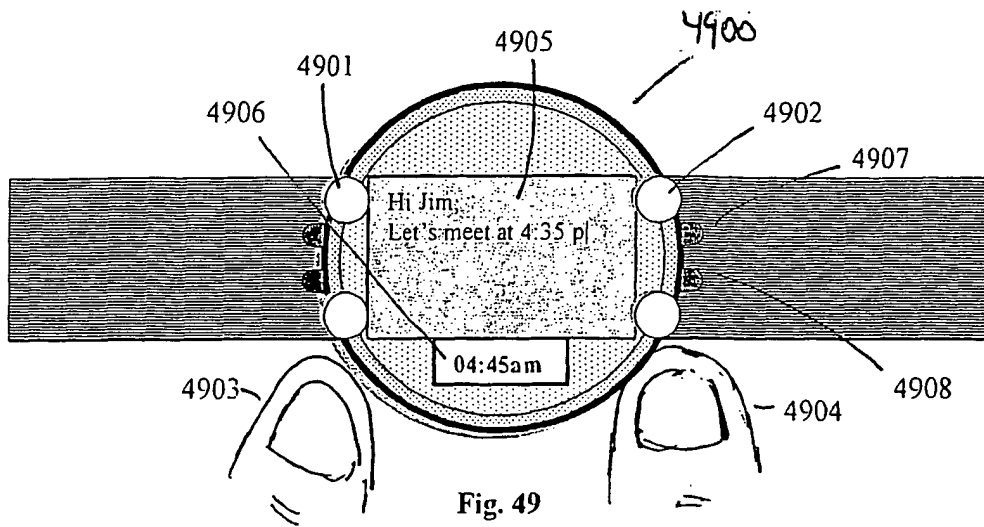


Fig. 48



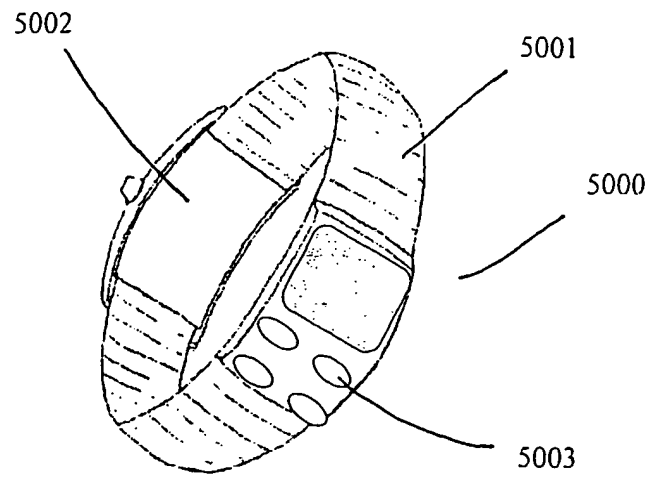


Fig. 50a

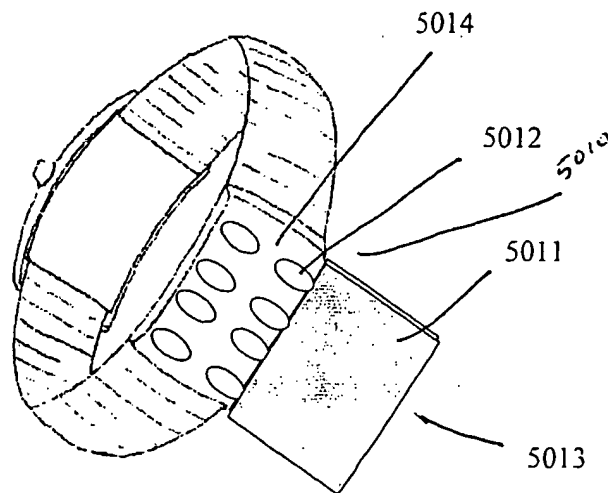


Fig. 50b

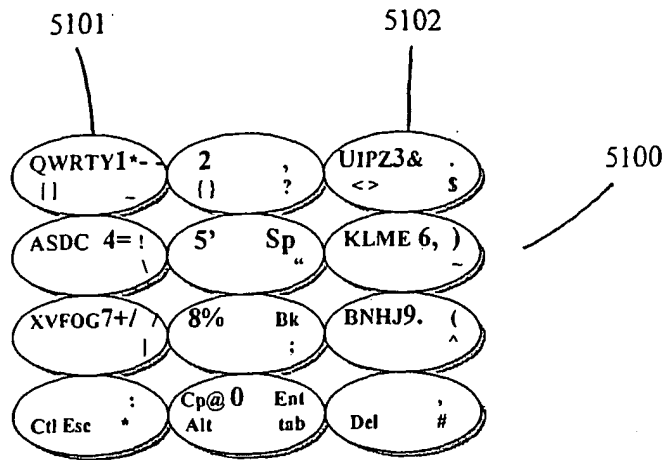


Fig. 51

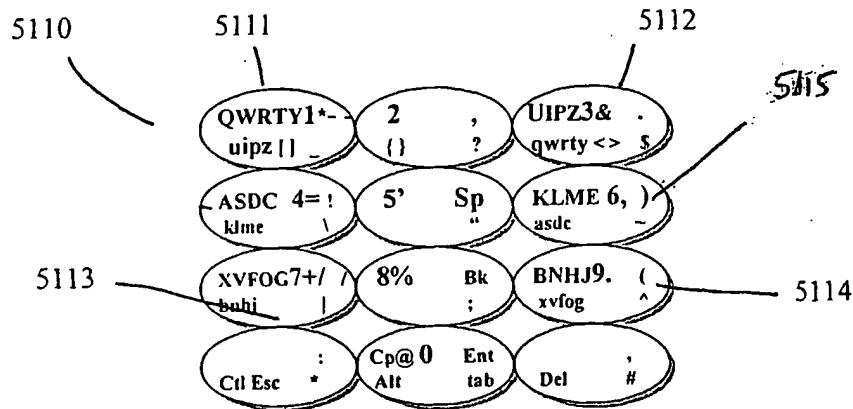


Fig. 51a

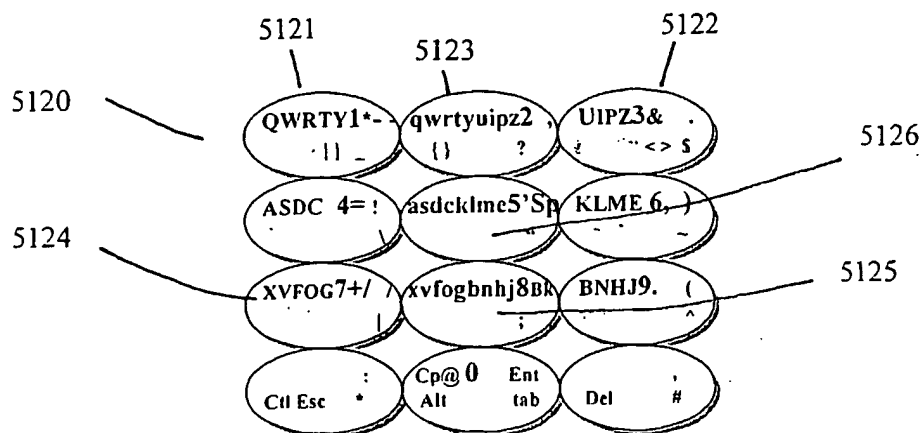


Fig. 51b

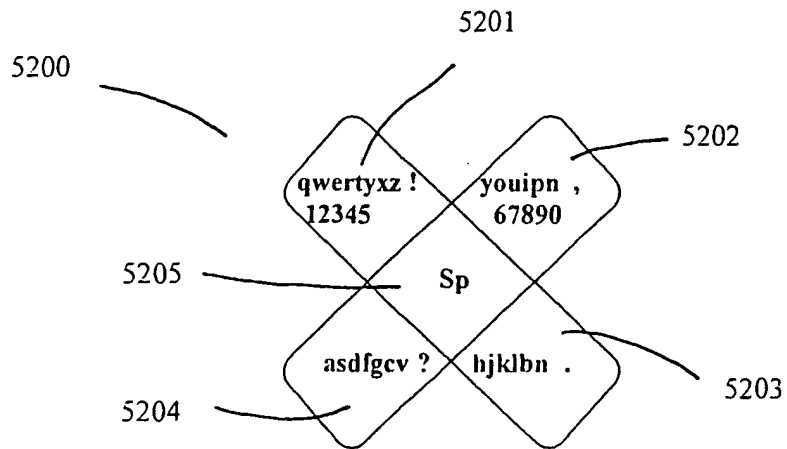


Fig. 52

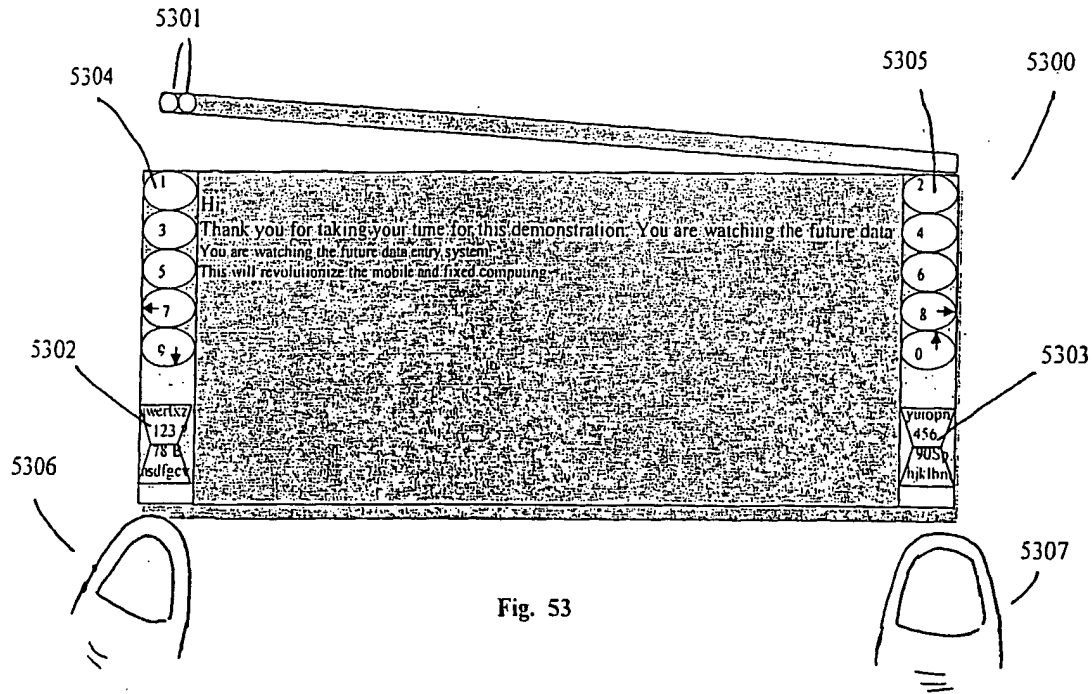


Fig. 53

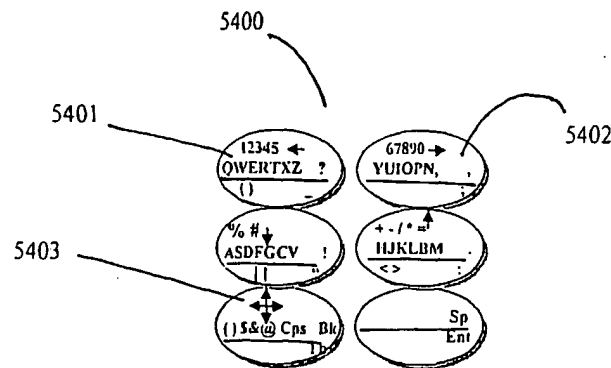


Fig. 54

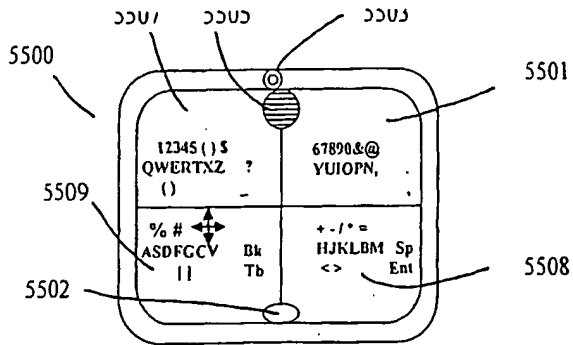


Fig. 55a

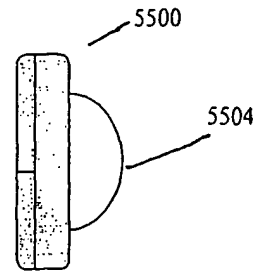


Fig. 55b

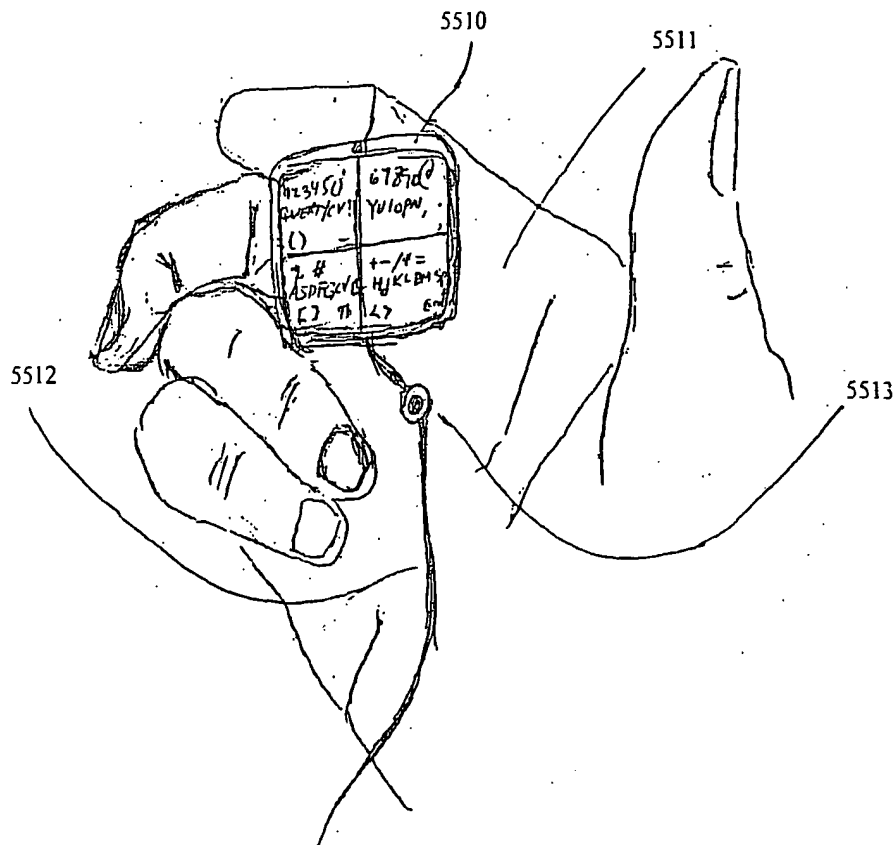


Fig. 55c

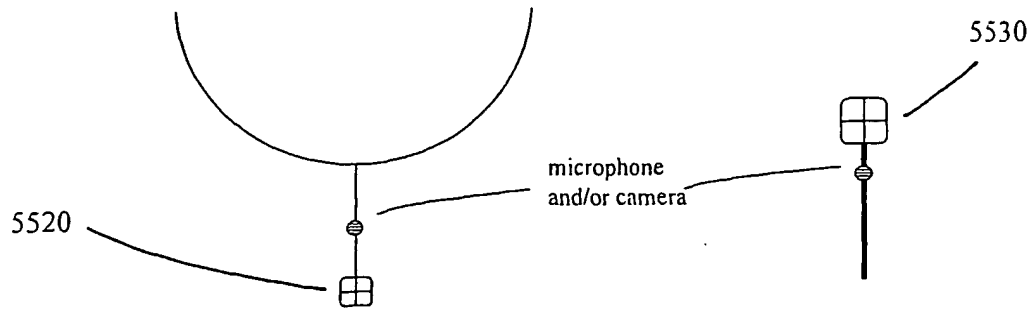


Fig. 55d

Fig. 55e

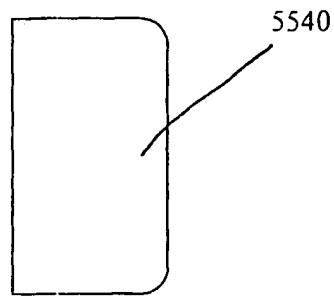


Fig. 55f

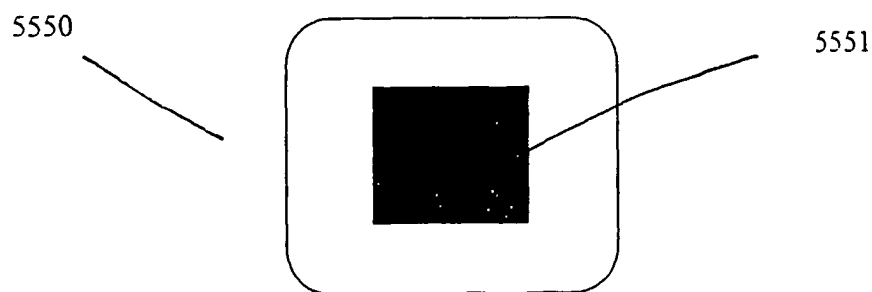


Fig. 55g

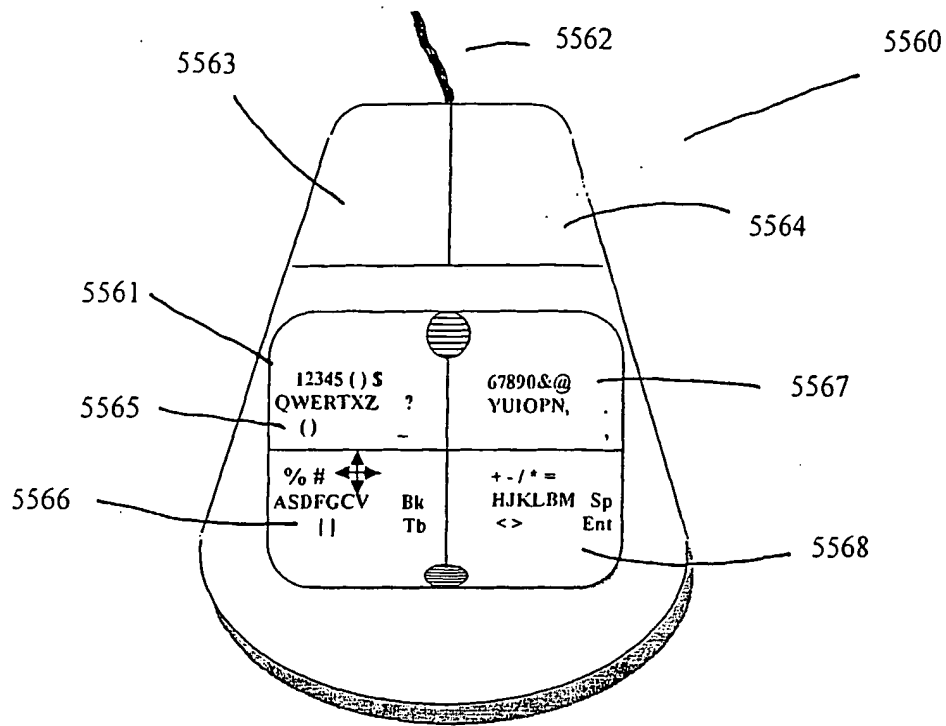


Fig. 55h

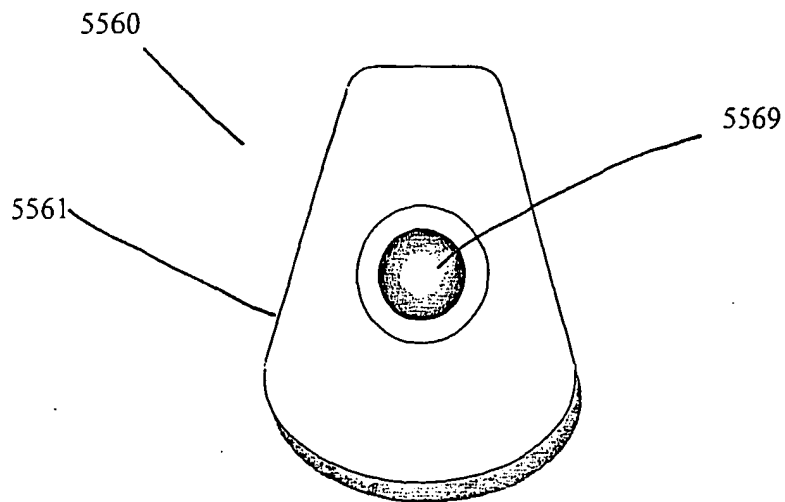


Fig. 55i

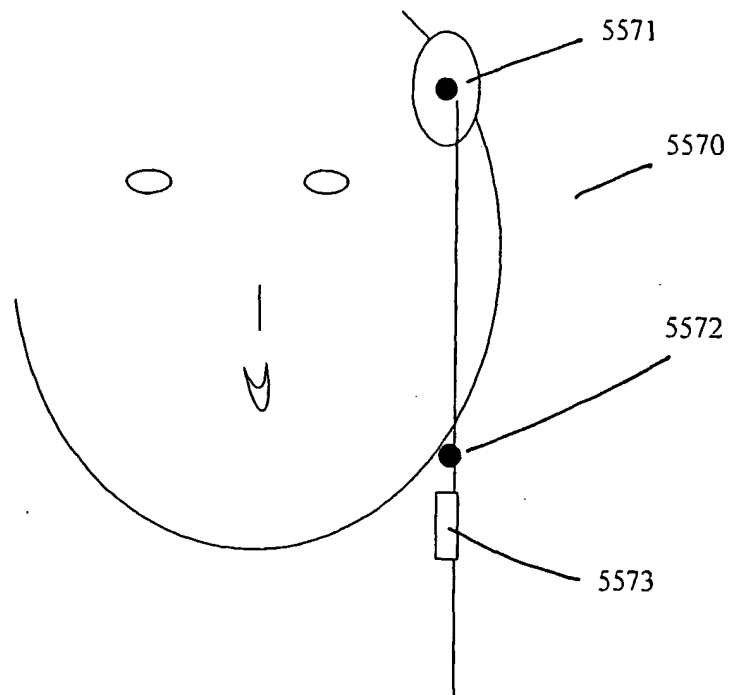


Fig. 55j

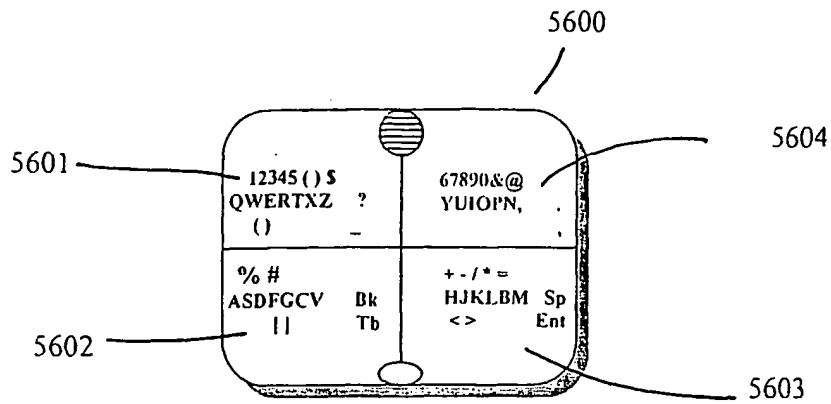


Fig. 56

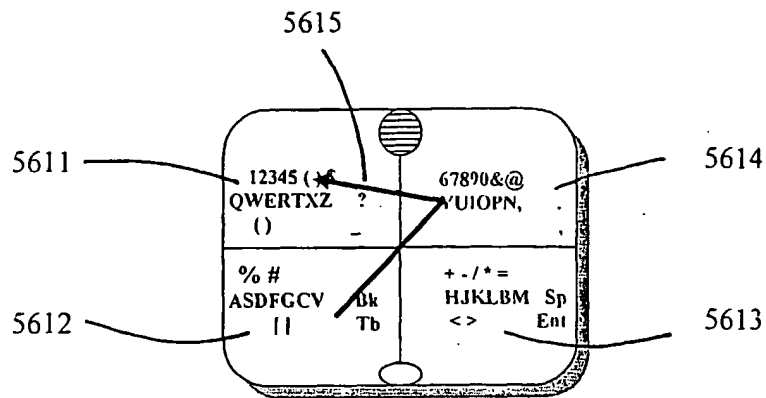


Fig. 56a

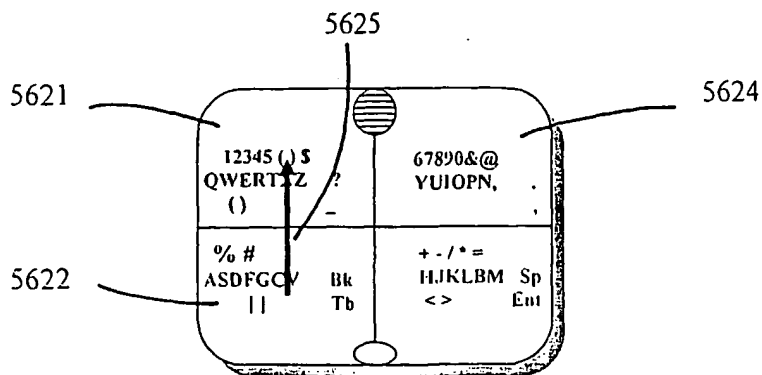


Fig. 56b

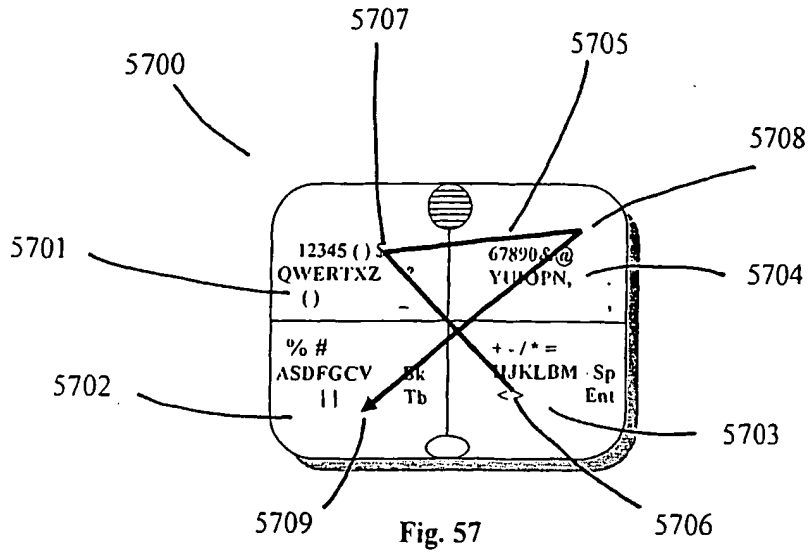


Fig. 57

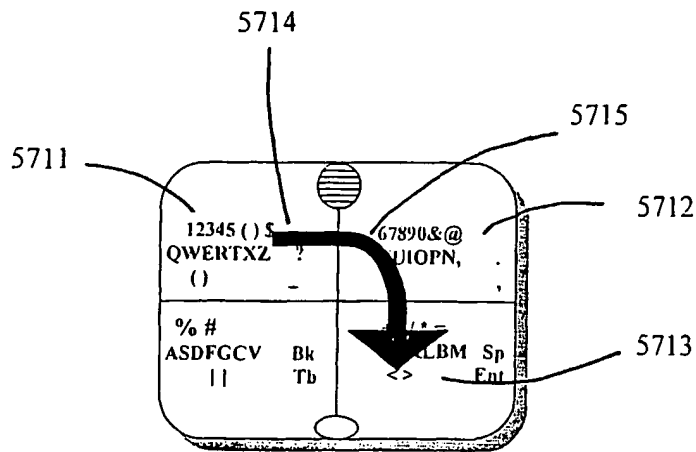


Fig. 57a

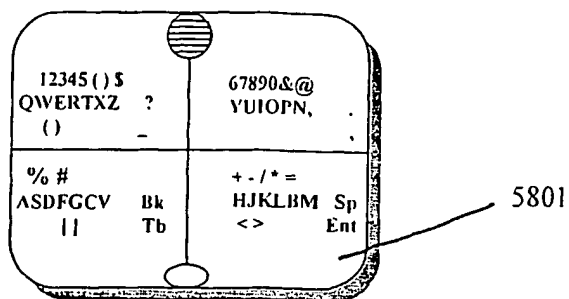


Fig. 58a

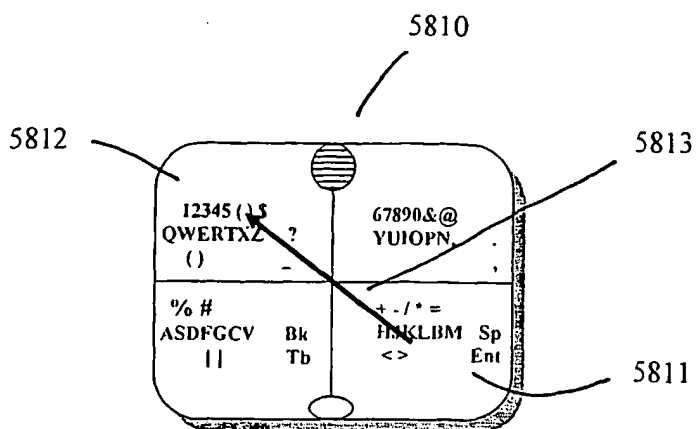


Fig. 58b

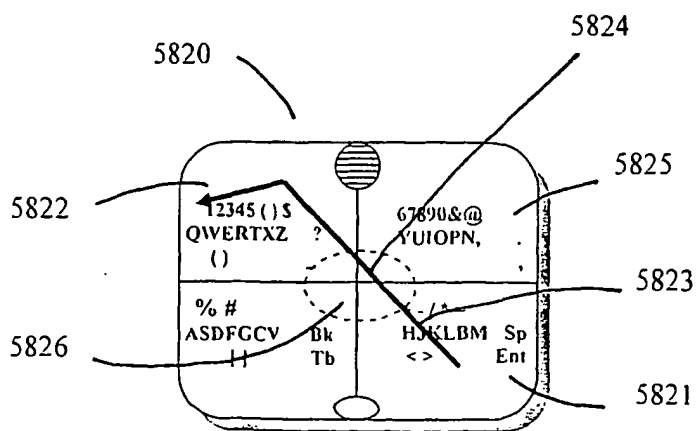


Fig. 58c

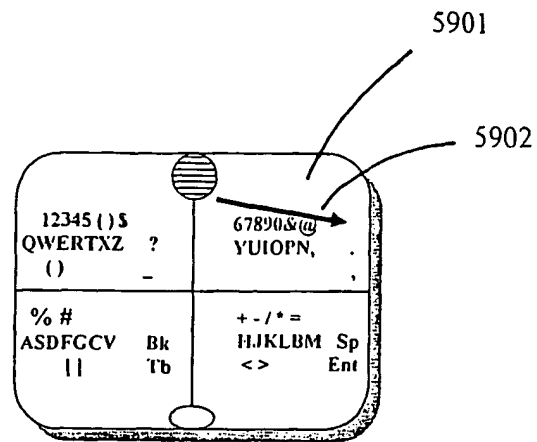


Fig. 59a

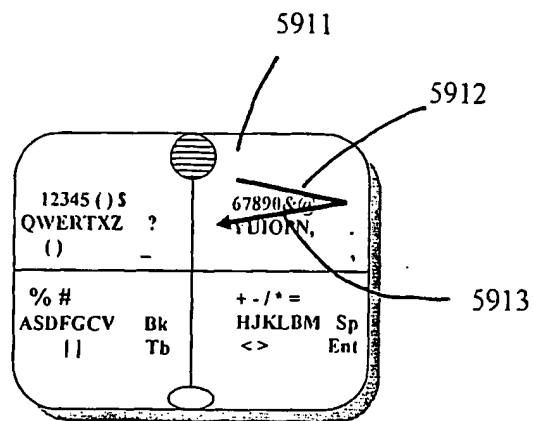


Fig. 59b

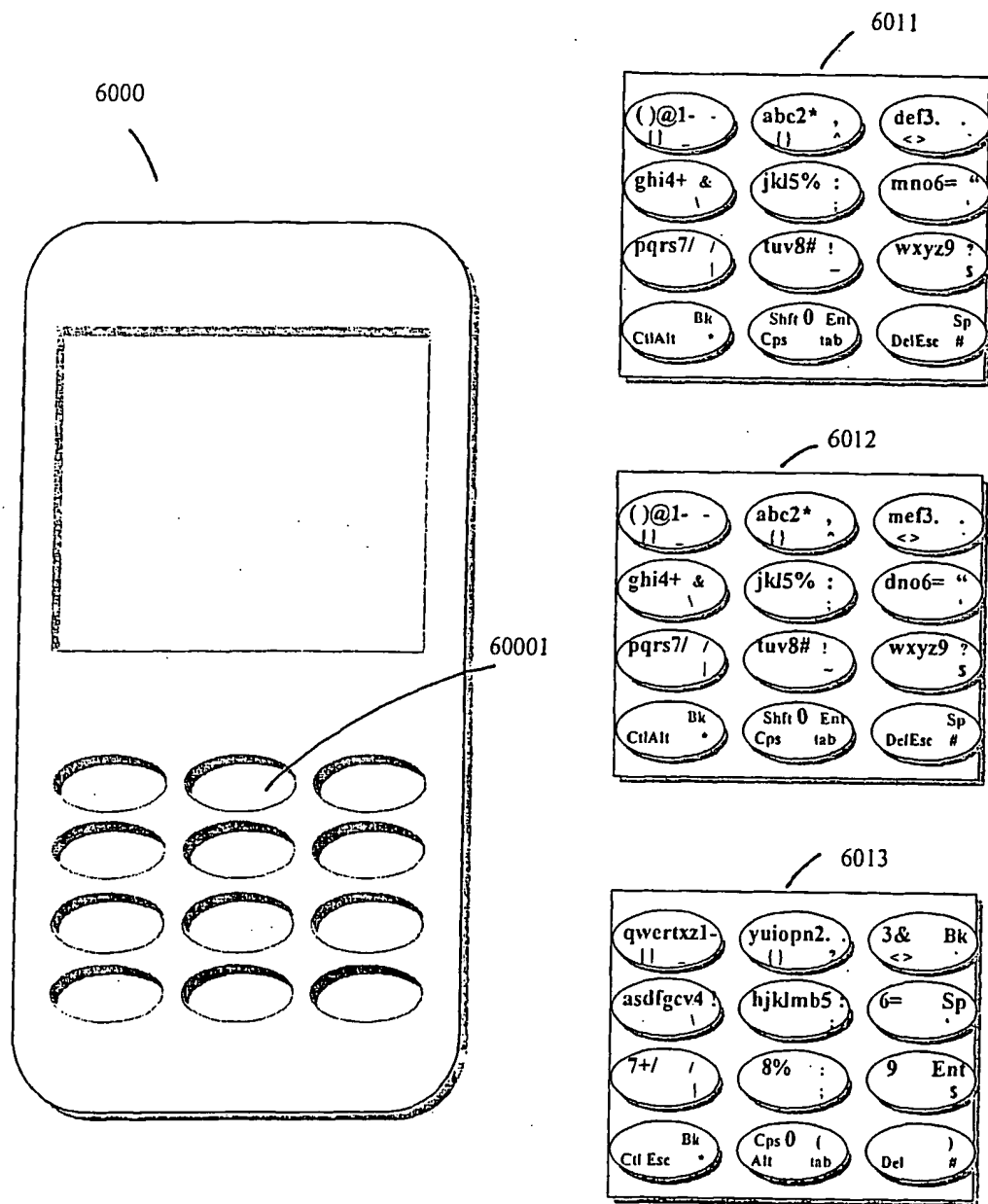


Fig. 60

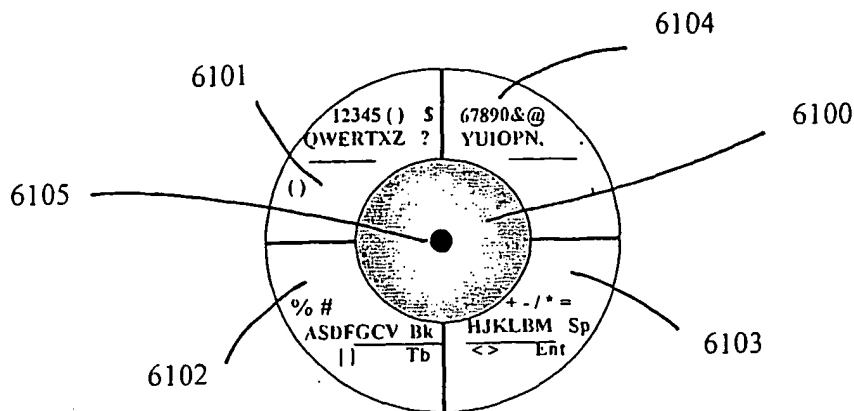


Fig. 61a

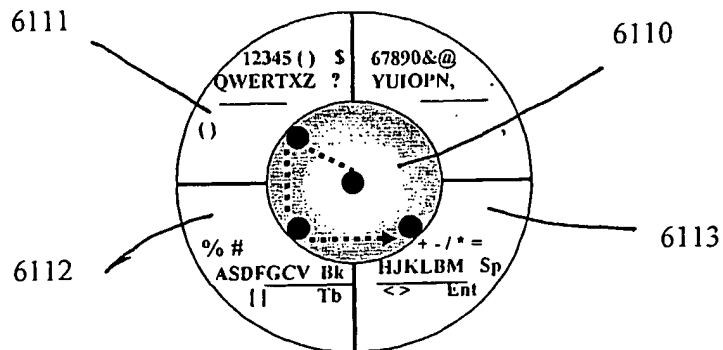


Fig. 61b

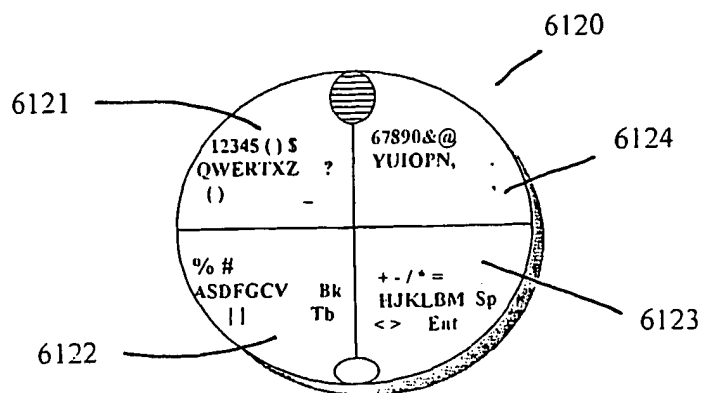


Fig. 61c

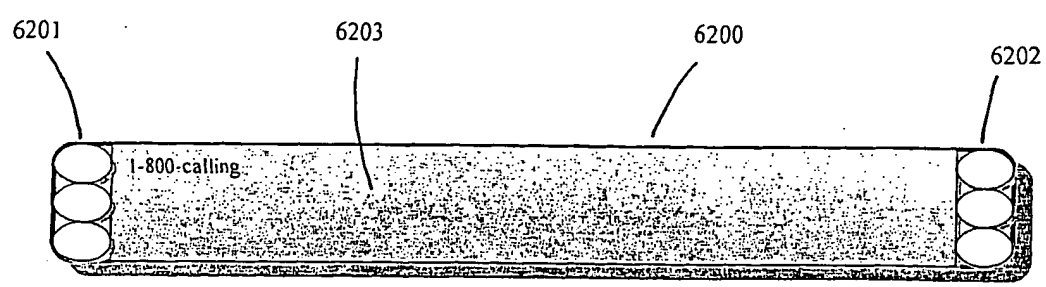


Fig. 62a

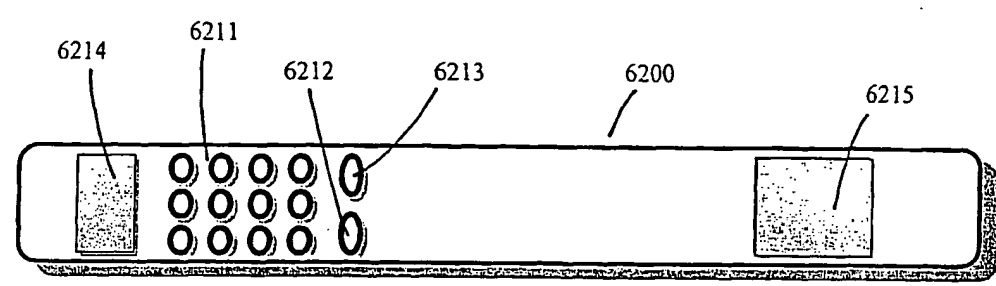


Fig. 62b

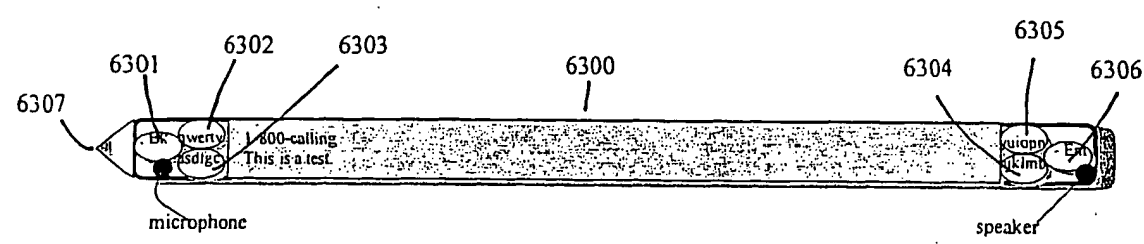


Fig. 63a

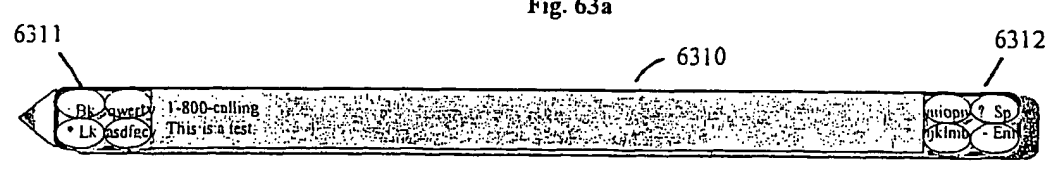


Fig. 63b

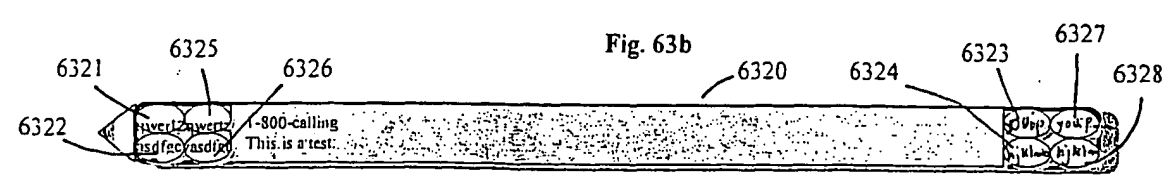


Fig. 63c

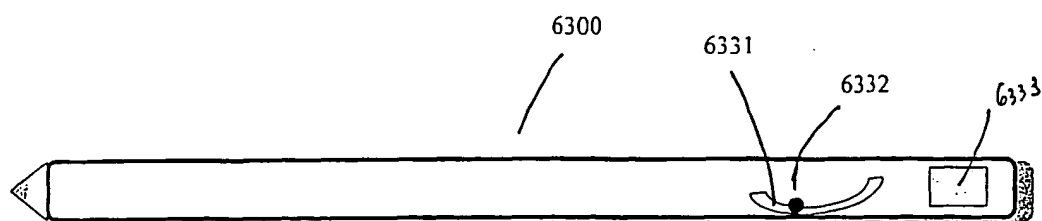


Fig. 63d

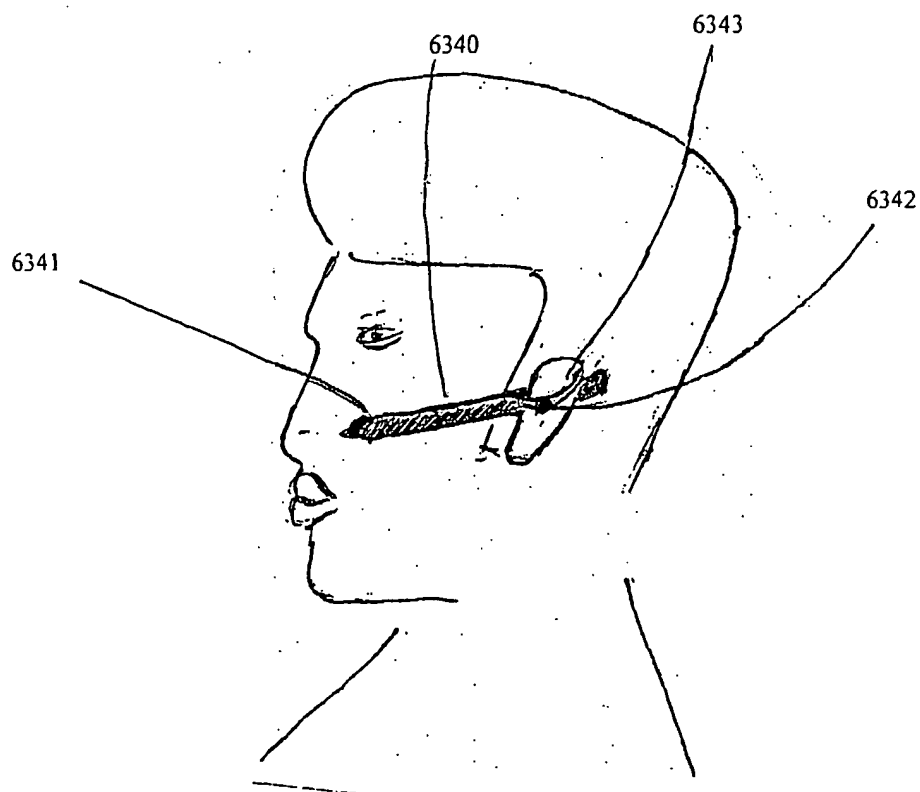


Fig. 63e

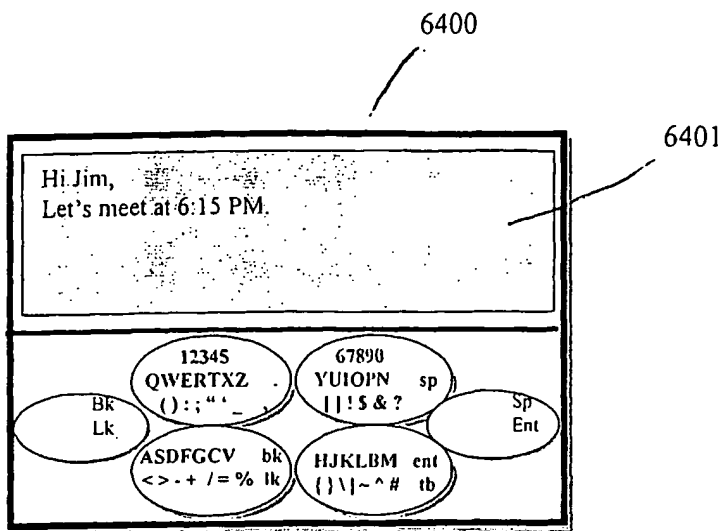


Fig. 64a

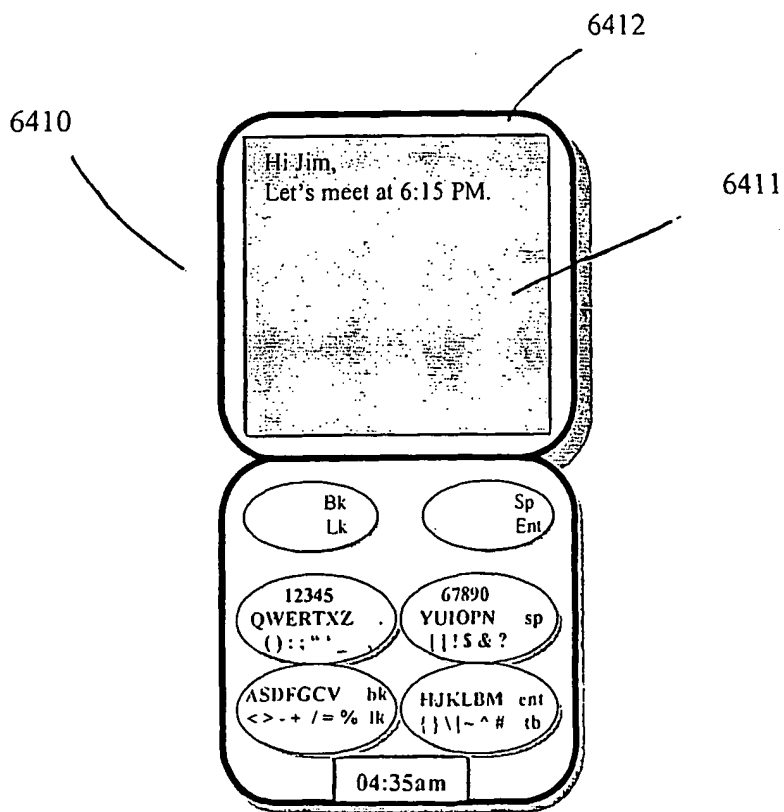


Fig. 64b

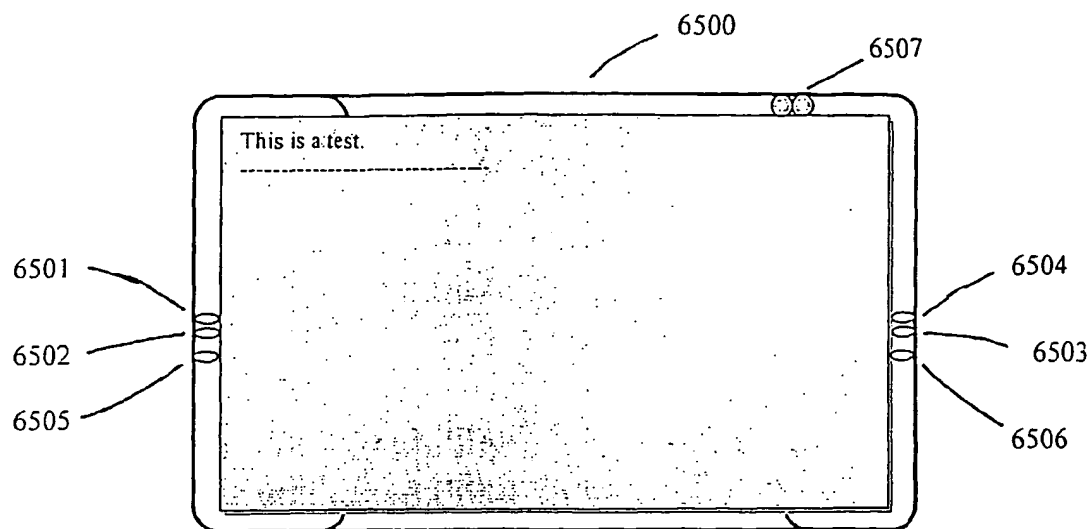


Fig. 65a

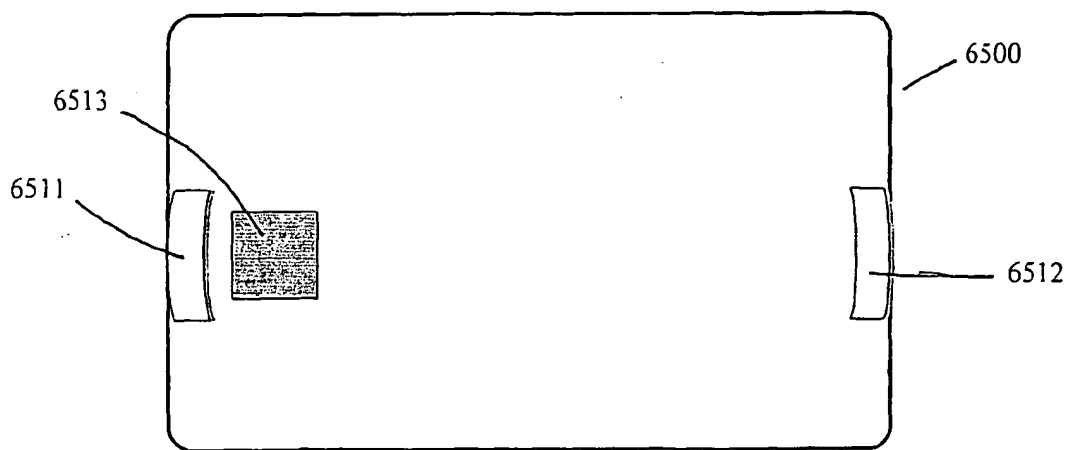


Fig. 65b

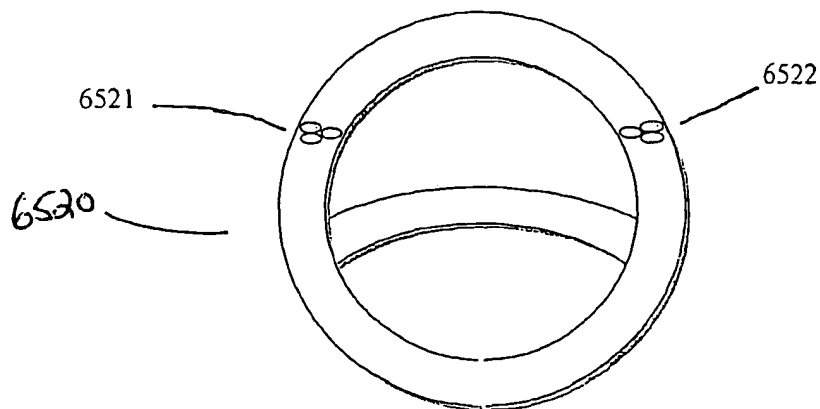


Fig. 65c

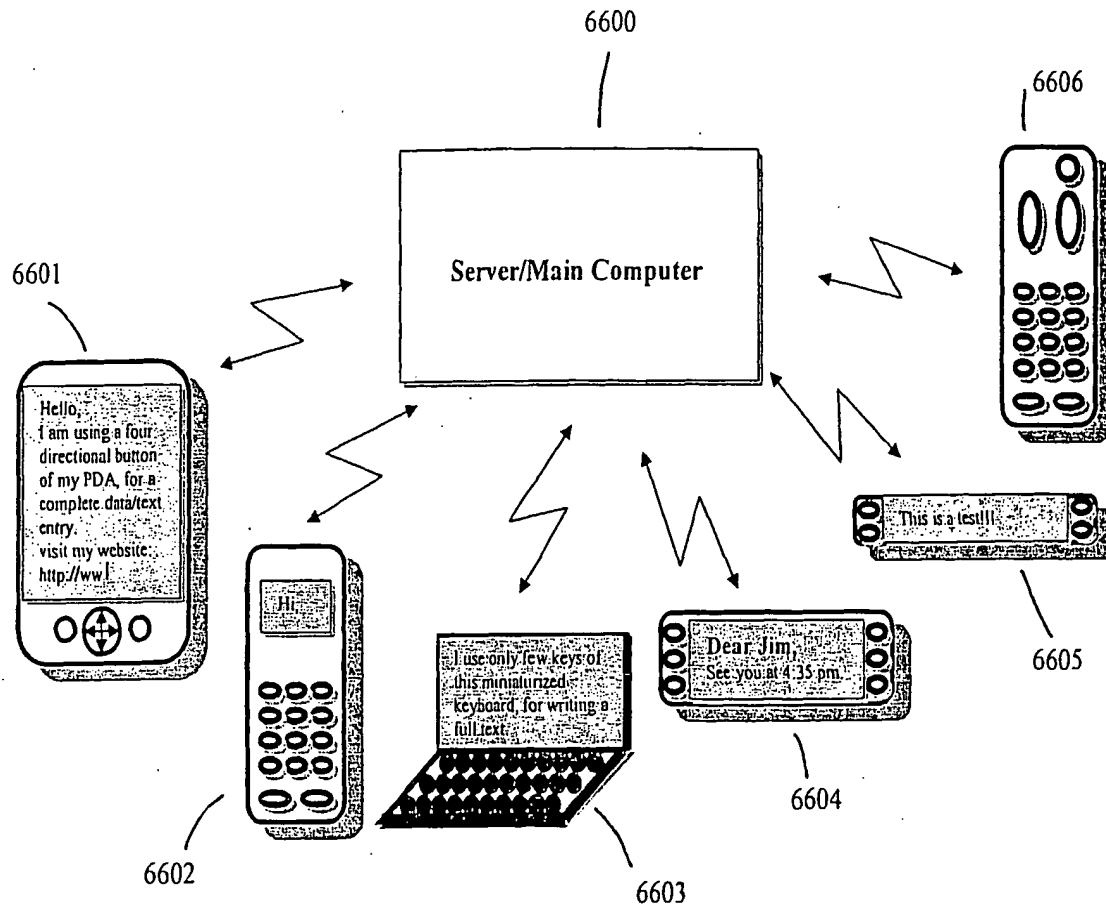


Fig. 66

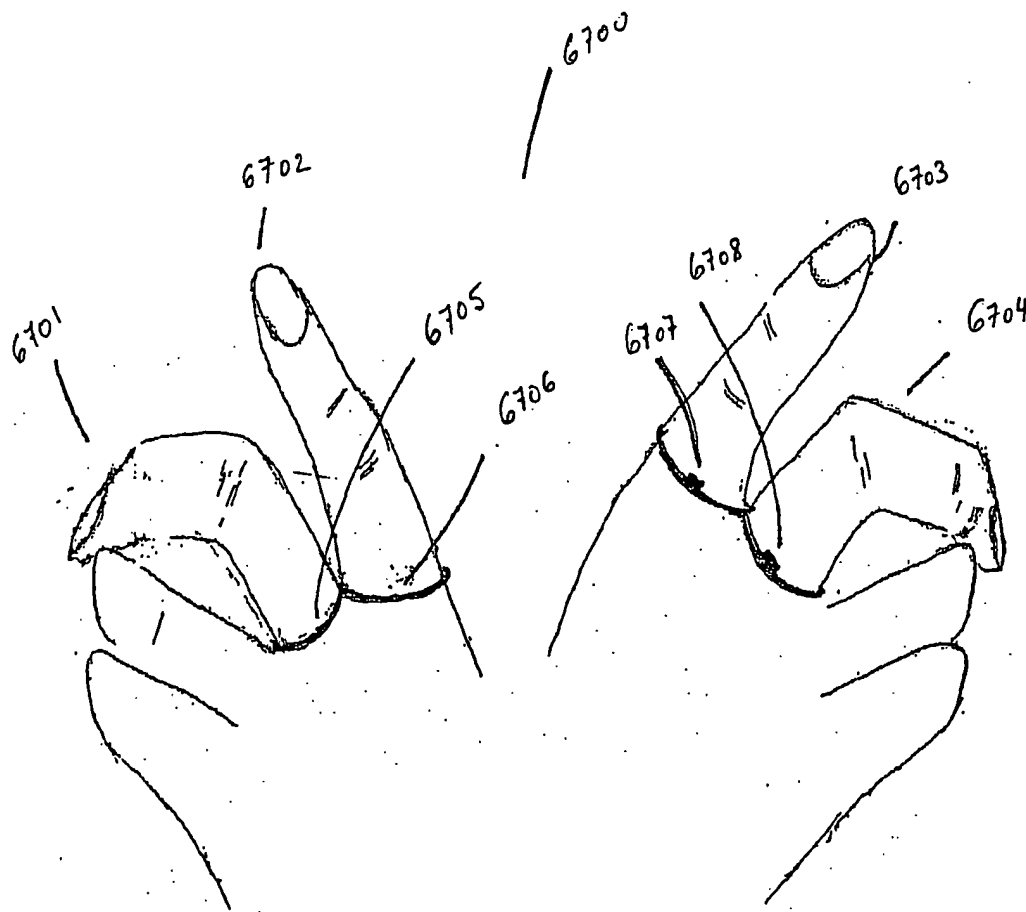


Fig. 67

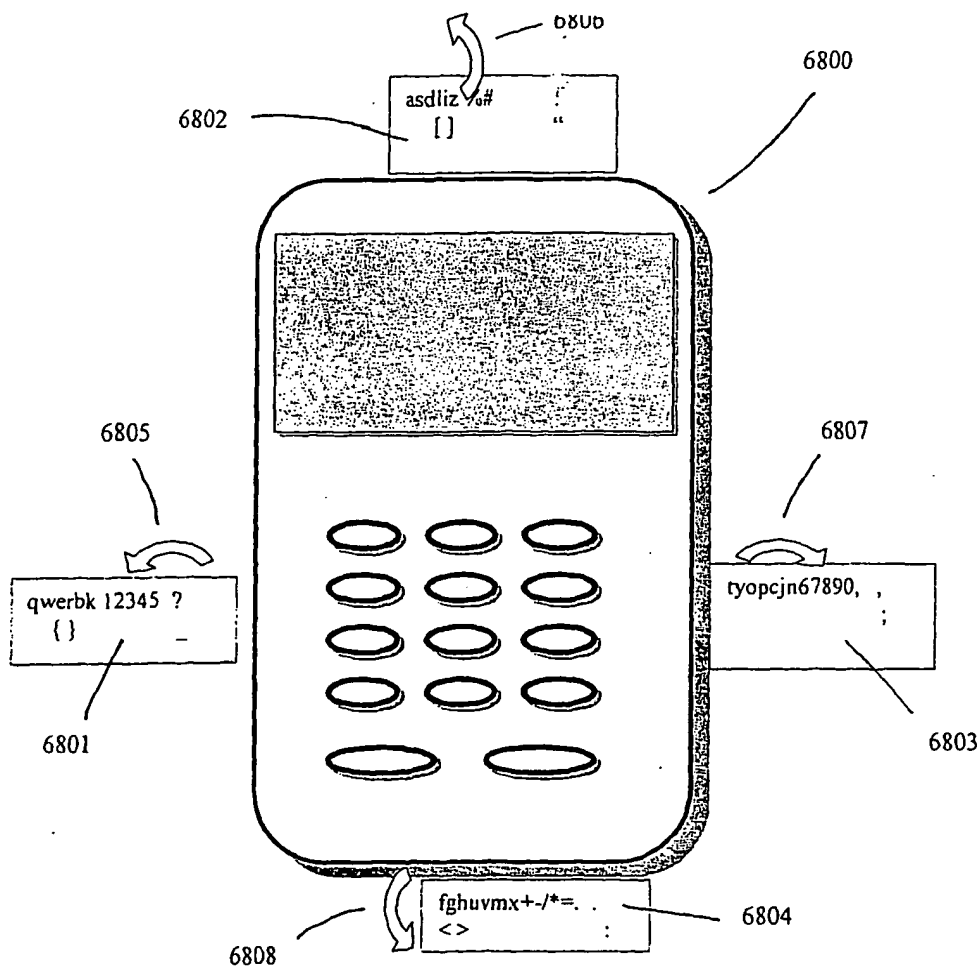


Fig. 68

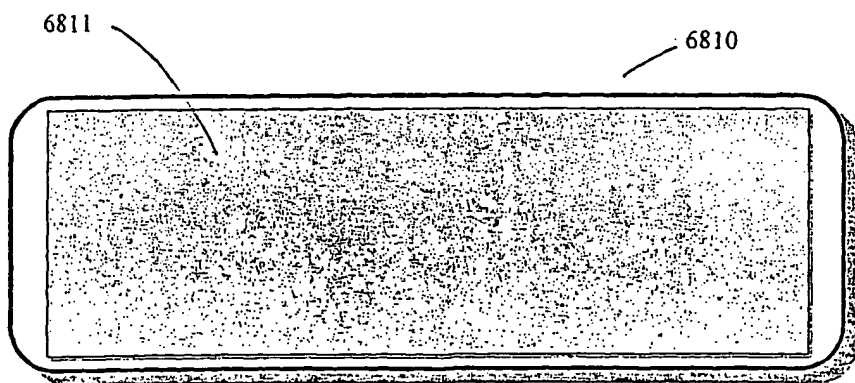


Fig. 68a

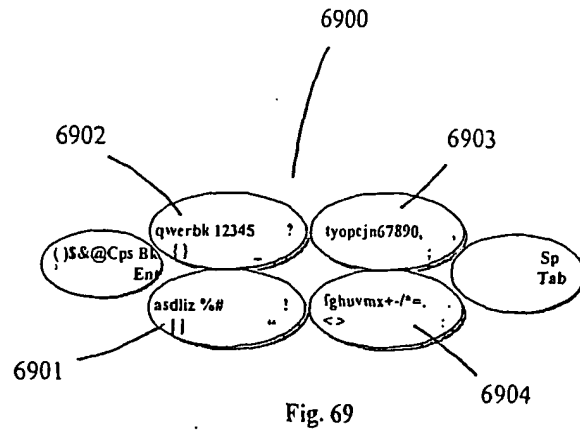


Fig. 69

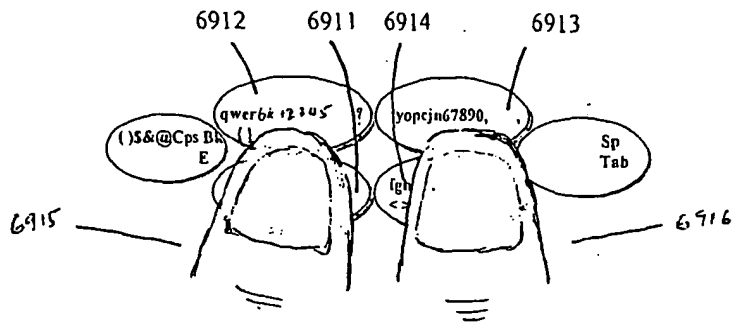


Fig. 69a

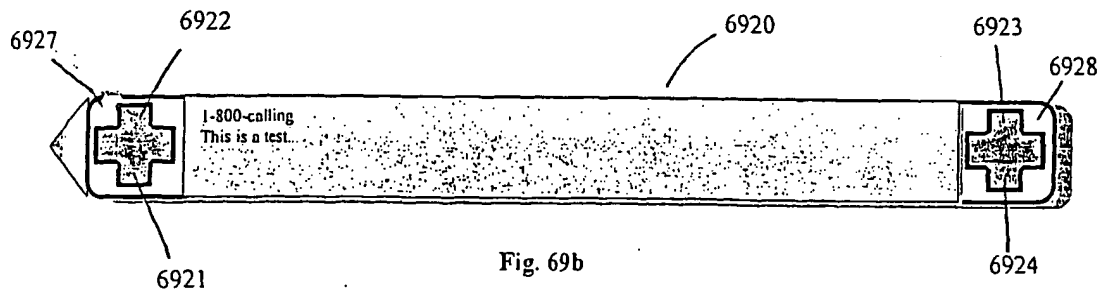


Fig. 69b

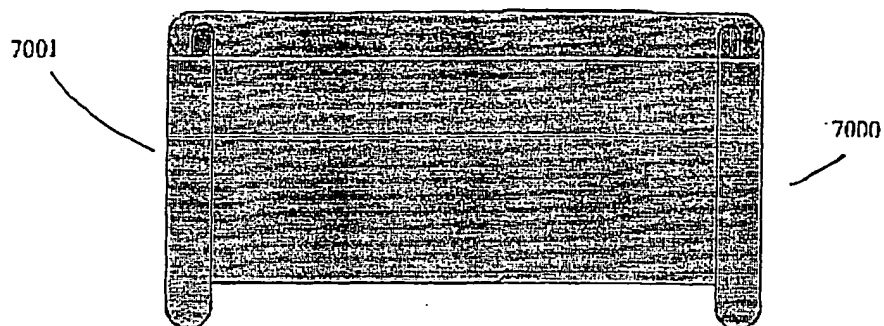


Fig. 70a

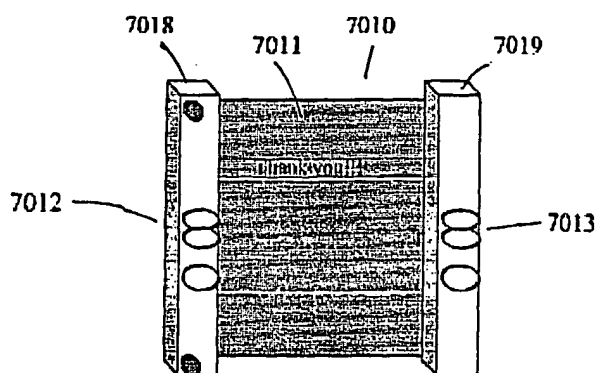


Fig. 70b

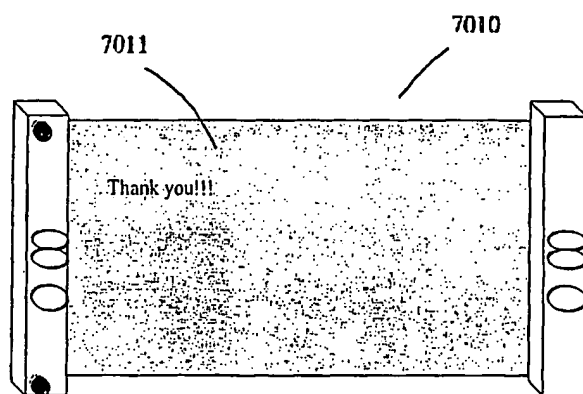


Fig. 70c

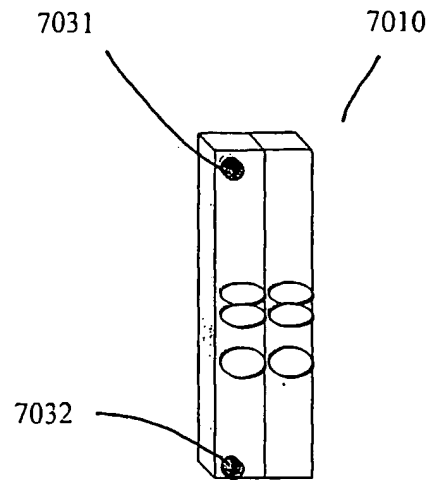


Fig. 70d

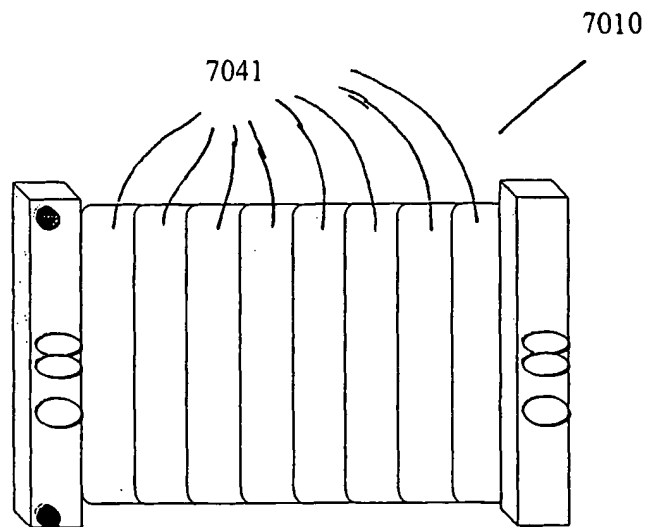


Fig. 70e

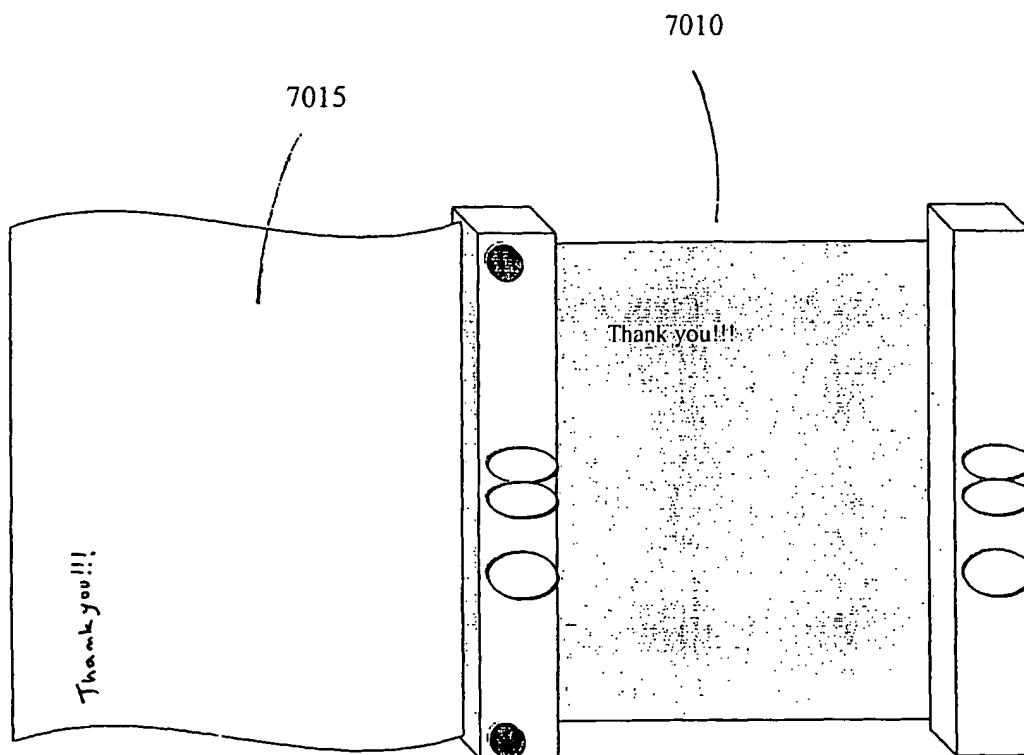


Fig. 70f

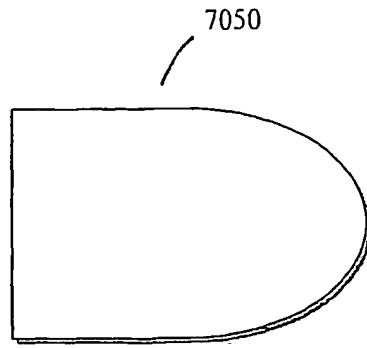


Fig. 70g

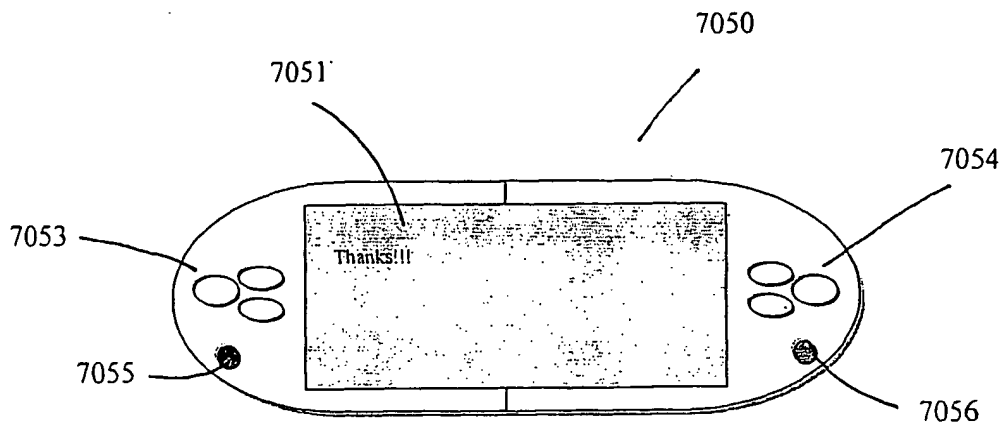
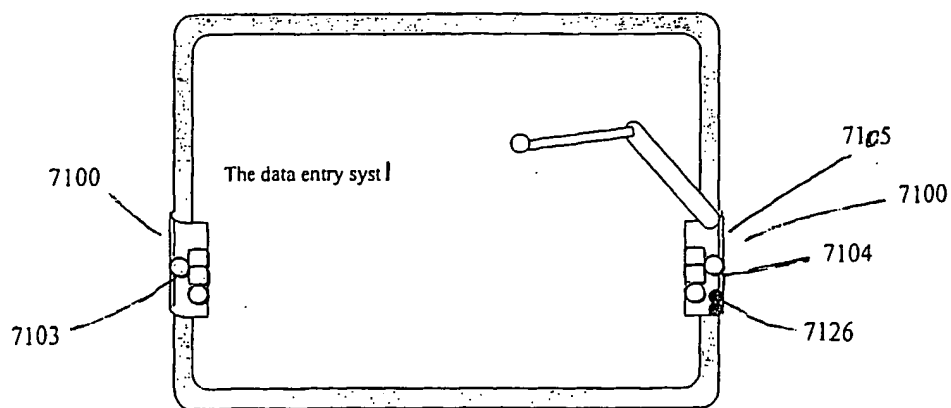
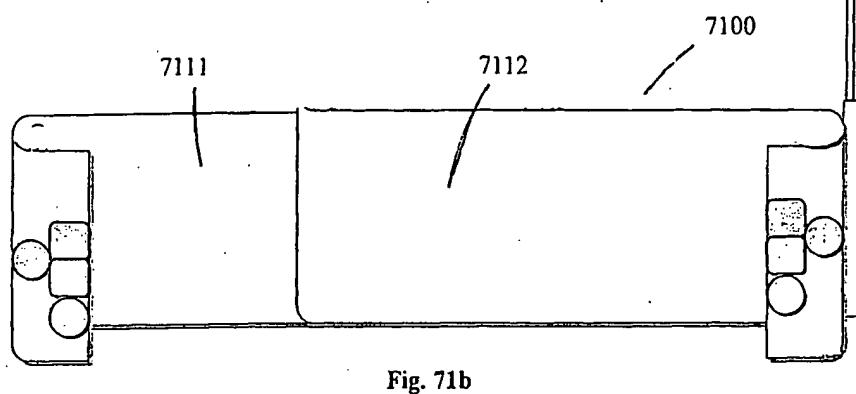
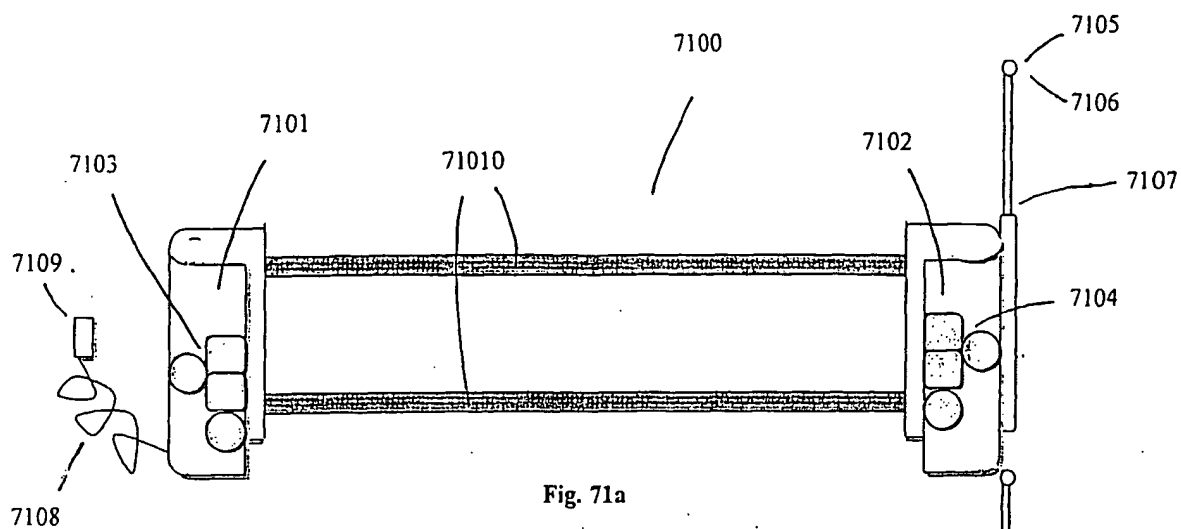


Fig. 70h



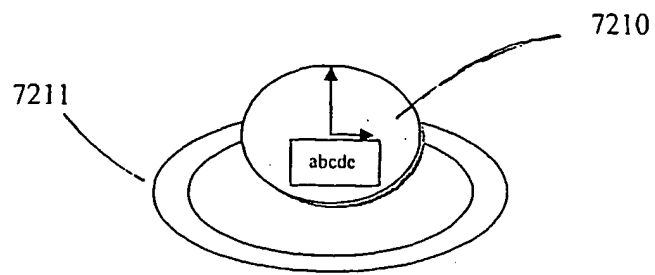


Fig. 72a

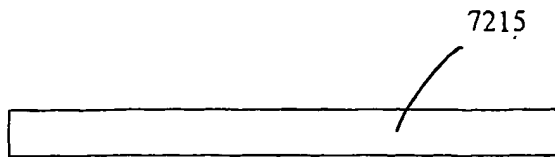


Fig. 72b

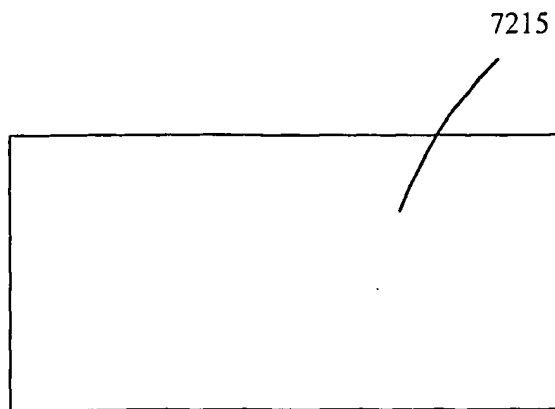


Fig. 72c

# INTERNATIONAL SEARCH REPORT

International application No

PCT/US04/12082

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G09G 05/00

US CL : 345/168, 169, 172

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 345/168, 169, 172

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,295,052 B1 (KATO et al) 25 September 2001 (25.09.2001), column 19, line 28 - column 20, line 67 and column 22, line 66 - column 24, line 39.	1
A	US 4,531,119 (NAKAYAMA et al) 23 July 1985 (23.07.1985).	1
A	US 5,790,103 (WILLNER) 04 August 1998 (04.08.1998).	1
A	US 5,867,149 (JAEGER) 02 February 1999 (02.02.1999).	1
A	US 6,326,952 B1 (AMRO et al) 04 December 2001 (04.12.2001).	1
A	US 6,445,381 B1 (CHOU) 03 September 2002 (03.09.2002).	1



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 05 August 2004 (05.08.2004)	Date of mailing of the international search report 23 AUG 2004
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer Bipin Shalwala Telephone No. (703) 305-4700

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US04/12082

Continuation of B. FIELDS SEARCHED Item 3:

EAST:

search terms: keypad, keyboard, key, button, pushbutton, symbol, alphabet, alphabetic, numeral, numeric, command, punctuation, finger, digit, recognition, sense, detect, multi-function key